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# THE CARE OF INFANTS

## A MANUAL

### FOR MOTHERS AND NURSES

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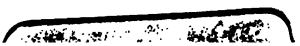
SOPHIA JEX-BLAKE M.D.



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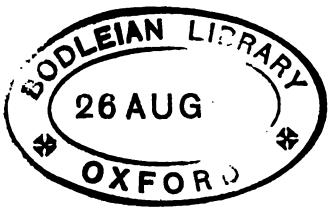


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THE

# CARE OF INFANTS

## A Manual for Mothers and Nurses

BY

SOPHIA JEX-BLAKE, M.D.

MEMBER OF THE IRISH COLLEGE OF PHYSICIANS;
LECTURER ON HYGIENE AT THE LONDON SCHOOL OF MEDICINE FOR WOMEN;
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EDINBURGH PROVIDENT DISPENSARY FOR WOMEN AND CHILDREN

'PREVENTION IS BETTER THAN CURE'

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# INTRODUCTION.

It is a sufficiently startling fact—familiar enough to the Registrar-General, but hardly realized as it should be by the general public—that *nearly one-half of the whole population die under the age of five years.* I take up, as I write, the last return of the Registrar-General for Scotland, and find that in the eight principal towns of Scotland there occurred in July 1884 a total of 2367 deaths; of which 1002, or more than 42 per cent, were of children under five. This enormous waste of life becomes simply appalling to those who realize, as medical practitioners can hardly fail to do, that the greater part of it depends on wholly preventable causes,—in plain words, on *ignorance* and *neglect.* The great majority of these deaths could have been easily avoided by common care, combined with the most elementary knowledge of an infant's nature and needs; but, in the lower classes at least, these cases do not *come under* medical charge till a late, and fre-

quently a hopeless, stage; and the poor mothers, overwhelmed as they often are with the heavy burden of their daily lives, may have treated their babies affectionately indeed, but with a crass ignorance which has been as fatal as intentional infanticide. Of the latter, alas, the doctors who work among the poor get but too many sad glimpses; and when Parliament has leisure to attend to the problems of life and death among the masses, it is to be hoped that an Act may be passed to render penal those ghoulish burial clubs in which babies are entered at a few weeks old, and from which the money is but too frequently quickly claimed.

Into this latter subject, however, I cannot enter at present; but I am anxious in the following pages to supply, in the simplest and easiest possible way, the few leading facts respecting infant existence, and to specify as briefly and clearly as may be the treatment demanded by Nature and common sense for the preservation of the frail little lives that are perishing in millions for want of it.

The study and practice of medicine seems to me to be divided into two tolerably distinct *branches,—Preventive* and *Curative*; and whereas *the second of* these will, I think, be left by all

wise people to those who, by years of study of books and at the bedside, have mastered some at least of its difficulties, the former should, in my opinion, form an integral part of every system of education which has any pretension to completeness. My hope in the following pages will be to help mothers to prevent the occurrence of avoidable illness; and, while by no means encouraging them to attempt anything like "medical" treatment in the nursery, to show in how many instances by previous care and reasonable precaution the door may be shut before the steed is stolen, and the occasion for the doctor's visit may be altogether averted. I have no hesitation in saying that, in my own practice, two-thirds of the cases of illness among infants would never have arisen, if the mothers and nurses had obeyed even the most ordinary axioms of Nature and common sense.

Many, indeed, of the remarks I shall make are so excessively simple and self-evident that I should apologise for writing them down, but for the experience that I am daily gaining in professional life of the ignorance that prevails on the subject, and of the disastrous results of such ignorance. Nor is it among the uneducated *alone that I* find this the case. Many girls who

are most highly educated, and thoroughly accomplished, are yet left to encounter the problems of early motherhood with absolutely no training or preparation; and only learn by extreme anxiety and perhaps most painful loss, the importance of that which no one has taught them. Nor is the difficulty always overcome by the employment of highly-paid nurses, for many of them have a traditional code from which they will allow no appeal, but which, in point of fact, is quite as irrational, and at least as dangerous, as the results of the crudest inexperience.

There is, so far as I know, no short and simple handbook on the subject for the use of mothers; such works of this kind as exist are mostly not of recent date, and are apt to be overloaded with a great deal that is needless if not undesirable. By far the best of such publications with which I am acquainted is that by Dr. Andrew Combe,[1] but it exceeds both in size and price the limits adapted to very wide circulation, and out of Edinburgh it appears to be by no means so well known as it deserves. Medical works, intended for the use of the profession, are

[1] *Management of Infancy.* Maclachlan and Stewart, Edinburgh. *First* published in 1840; subsequent editions edited by *Sir James Coxe* and Sir James Clark.

of no use for the purpose in view; for the last thing that is to be desired is that mothers and nurses should undertake themselves to treat cases of real illness. What I am told is urgently wanted, and what I shall endeavour in the following pages to supply, is a perfectly simple statement of the elementary facts concerning infancy, and of the ordinary care that is needed by a healthy child; with a few hints for the treatment of slight ailments, which, if neglected, may verge into most serious illness. The "cure" of disease is indeed interesting and important, but I believe that the noblest province of the physician lies in "prevention"; and no detail can be too homely, no caution too minute, if by such means a single infant life may be spared, or a single mother relieved from cruel and harassing anxiety.

SOPHIA JEX-BLAKE, M.D.

*October* 1884,
BRUNTSFIELD LODGE, EDINBURGH.

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lime. Pure violet powder should consist mainly of starch, with a small addition of powdered orris-root, and some scent. If any irritation is found to follow the use of powder, it should be at once discontinued, and the powder submitted to analysis.

Before proceeding to dress the baby, the remains of the cord should be carefully enveloped in a soft piece of cambric, to prevent friction against the body or clothes. Nurses are very fond of cutting a hole in the cambric and drawing the cord through it, but this involves a risk of pulling at the root of the cord, which should be most carefully avoided, and it is much better simply to lay the rag under the cord, and then fold it over and around it. If a cut is made across the rag, from the middle of one of the sides to the centre, the cord can be conveniently laid in the slit, and will be less likely to be displaced. Before covering up the cord, the nurse should look carefully to see that there is not the least oozing of blood, as this occasionally occurs after the washing in warm water; and if there is any tendency to bleeding, it may be necessary to tie a second ligature around the cord. If this is done by the nurse, she must be extremely careful to avoid pulling at the root.

To avoid recurrence to this topic it may be as well to say here that the end of the cord falls *off within the* first week; and that in most cases *it needs no attention* whatever, as it naturally

withers up and drops off. Occasionally, however, it leaves a slight sore, and this is generally best dressed with a drop of glycerine, or a little zinc ointment spread on rag. If it does not heal up thoroughly within a day or two, the attention of the doctor should be called to it.

After the cord is properly protected, a broad binder of soft flannel is usually put round the body, and it may be well to say that this binder should have no hems, as these are apt to make uncomfortable ridges, hurting the baby's tender skin. The edges should be left raw, or button-holed with fine silk. The binder should be carefully proportioned to the baby's size, to come well up over the stomach; and it should not be tightly fastened, as some allowance must be made for the increase in size of the stomach after a meal. A good plan is to fasten it with a needle and rather strong thread, with a "lacing" stitch, catching only the edge of one fold of flannel. If a baby cries after its meal, the nurse should always see whether the binder has become too tight. A triangular double napkin is then put on, the three ends being brought together in front, and secured with a safety pin, or with tapes. Sometimes the napkin is also attached to the binder either at back or front, but for a very young infant this is hardly necessary. Special care should be taken not to make too great a lump *between the* legs, and not to fasten the napkin

too tightly, so as to interfere with the child's movements. It used to be the fashion to put a second thick covering or "pilch" over the napkin, to keep the outer clothes from wet; but this is by no means healthy, as it over-heats this part of the body, and is often a mere excuse for neglecting the frequent changes that should be made, so that the skin is apt to become sodden, and subsequently sore, from damp heat. A waterproof pilch is particularly objectionable, and should never be worn indoors. In fact the pilch is an undesirable relic of the old days when it was popularly believed that "a frequent change of linen had a tendency to weaken new-born children." [1]

It seems hardly necessary to say that any but safety-pins are quite inadmissible for an infant's toilet, and it is much better so far as possible to make tapes and buttons replace pins altogether, and even buttons must be used with precaution. Many an unexplained cry, which alarms a young mother, depends on no more recondite cause than an unlucky pin, misplaced by a careless nurse; by a little careful arrangement it is quite easy to do away altogether with this element of danger. It must be remembered that the napkin will probably have to be changed many times in the course of the day, and therefore its attachments to the binder (if any) should be as simple and *as easily* accessible as possible.

[1] *Dr. Underhill's Management of Infants.* London, 1789.

The rest of the baby's clothing will probably follow the prevailing fashion; but, from a medical point of view, simplicity, lightness, and warmth are chiefly to be desired. It is much better to make shoulder-straps in every case to button or tie, so that there may be no dragging the tender little arms in and out of the arm-holes,—a process which is always unpleasant to the child, and sometimes not free from danger to the delicate shoulder-joints. The long dress usually worn is so far to be commended, that it gives additional security from cold to the lower limbs; and during the first hours and days of existence the newly-established circulation is not adequate to preserve the animal warmth without abundant external assistance. But long clothes are very apt to get wet, unless the baby is too thickly swathed in napkins; nurses do not like to change the outer dress several times a day, and thus the baby may be for hours exposed to dampness that is most undesirable. A vigorous infant also very soon wants to kick its legs about, and finds itself unfairly impeded by the long skirt. If this is turned back the child will often at once avail itself of the increased liberty, and, if so, it never ought to be denied it. On the whole, the hygienic arguments are rather against than for the long dress, and its only advantages are easily supplied by a supplementary skirt, or a warm shawl wrapped round *the lower limbs*, when the baby is carried about

The fashion of caps for babies is, I believe, less prevalent than it was, and it is certainly undesirable to cover the head of a healthy child when in its nursery. Draughts, of course, must be carefully avoided; but in a well-ventilated, well-warmed room, with an average temperature of from 60° to 65°, there is no need for any covering to the head, and undue heat is particularly injurious in that region.

By the time that the baby's washing and dressing is completed, the mother is usually sufficiently rested to allow the infant to be put to the breast, and the sooner this is done the better it is for both mother and child. The nipple should be carefully washed, and perhaps moistened with a drop of milk, and then softly introduced into the baby's mouth,—the child being laid and supported in such a way as best to facilitate the process, and to obviate any kind of discomfort. Babies vary very much in their readiness to suck, and the nurse must not be disappointed if the first attempt, or even the second or third, is unsuccessful, though frequently there is no difficulty at all in the matter. If the mother appears to have little or no milk, the attempt should still be made; and, if unsuccessful, should be repeated at intervals of an hour or two, as the attempted suction will greatly accelerate the flow of milk. *The main point* is to see that the nurse gives *nothing else to* the child, as many nurses are pos-

sessed with an idea that it should be fed at the earliest possible moment, and that if the mother's milk is not forthcoming, something else should be immediately supplied. As a matter of fact a healthy infant will not suffer from want of food for twelve, or even twenty-four, hours after birth, as it comes into the world fully nourished, and passes most of its earliest hours in sleep. Any supply of other food will, on the other hand, immensely increase the difficulty of getting the infant to take the breast, besides very probably deranging its digestion and bringing upon it a whole train of evils. The only food really suited to a new-born infant is the newly-formed mother's milk, or *colostrum*, which differs widely from the secretion formed at a later period, and has in particular a specially laxative effect, which enables the child to discharge from its bowels the *meconium* which has accumulated during its intra-uterine existence.

I believe that monthly nurses are very often much in fault in cases where the mother is supposed to be unable to nurse her child. Many of them are by no means skilful in their attempts to make the baby suck, and others seem disposed rather to encourage the mother to relinquish the attempt. I do not know how far this is due to the fortunately obsolete idea of a past generation, that it was rather "interesting" for a lady to be *too "delicate"* to perform her daily duties, and

that the frequent fainting fits we find recorded in old novels were evidences of touching "sensibility," instead of being due, as now-a-days we should be apt to suspect, to the very unromantic cause of tight stays, or other neglect of the laws of hygiene. I trust that all sensible women will more and more assume it to be a matter of course, that, with very rare exceptions, a mother *can* nurse her own baby, if proper means are taken from the first to enable her to do so. I never accept excuses on this point, but make it clearly understood that I shall consider any nurse simply incompetent who cannot get the baby to suck, and under these circumstances the ultimate failures are very few and far between. It is perhaps necessary to add that under no circumstances should a nurse ever be allowed to "draw the breasts," with a breast-pump or otherwise, except by medical orders. Very great mischief may be easily done in this way.

Whether or not the infant has obtained a meal, it should (after a few minutes' trial if unsuccessful) be put to sleep; and it will probably require no further attention for a couple of hours. It may then again be put to the breast, and then again to sleep; the nurse of course ascertaining every time it is taken up whether the napkin requires to be changed; as few things are more *uncomfortable*, or indeed more unhealthy, for a *baby than* to be allowed to remain in damp

clothes. Many nurses who will change the napkins properly in the daytime, will not take the trouble to do so during the night, and babies are sometimes thus left in a most unwholesome state of dampness for many hours. Of course nurses, like other people, need a proper allowance of sleep; but arrangements should if possible be made that the person in charge of a baby during the night should take some rest in the daytime, so that there should be no excuse for negligence during the night, when the helpless infant is most of all dependent on her care. To neglect of proper cleanliness more than half the cases of sore and irritated skins are really due.

Some nurses have a very dirty trick of merely drying napkins before the nursery fire (thereby polluting the atmosphere) and using them again without washing, but this should never be tolerated for a moment.

The only other caution that may be needed during the first twenty-four hours is a negative one, viz. that the nurse is on no account to be allowed to physic the child on her own responsibility. The affection for the castor-oil bottle that is displayed by the less intelligent class of nurses is something amazing; and it is not at all uncommon, after leaving a child at night with strict injunctions that *nothing* is to be given to it, to be informed cheerfully in the morning, "Oh no, it *has had* nothing,—*except*, of course, castor oil!"

the effect of such meddling being simply to anticipate the gentle work of nature by an hour or two, at the cost of gripes and cries on the part of the unlucky baby.

Still more pernicious is the effect of the various "soothing syrups," which ought one and all to be marked *Poison* as regards young infants, and of which unprincipled nurses are apt sometimes to avail themselves without the mother's knowledge, for the sake of securing their own unbroken repose. Any nurse who does so should certainly receive instant dismissal. It would be well if more exemplary punishment could be inflicted alike on the makers, vendors, and buyers of such murderous merchandise; for few but doctors are aware of the very large number of infant deaths that may yearly be laid to their door, and in the present state of the law all alike (except the unlucky infants) escape with impunity.

## CHAPTER II.

### FOOD.

As stated in the last chapter, the only natural food for an infant is its mother's milk, and it is very much to be deplored that it should ever be deprived of this. Exceptional cases of course occur where the mother, from illness or otherwise, is really unable to suckle the child; but these should always be decided by the doctor; and it cannot be too often repeated that the milk of a newly-delivered mother is the only proper nourishment for a new-born child. If the mother is really unable to give her own milk, the best substitute for the child is of course the milk of another healthy woman, who was delivered at about the same time; and, if the wet-nurse's baby has died at its birth or subsequently, there can certainly be no objection to this course. If, however, the nurse's baby is still alive, it seems to me to raise a sufficiently difficult question in ethics whether the rich mother is justified in *tempting* the poor mother to forsake her own

child; for it is beyond question that the latter will probably die if deprived of its breast-milk, and left to such care as is common in the class to which it belongs; and thus the life of one baby is in all probability exchanged for that of the other. I suppose that the really righteous arrangement would be to allow the wet-nurse to bring her own baby with her, and to share her milk between the two; supplying any deficiency by giving each baby a little diluted cow's milk in addition. This was the plan adopted at the Massachusetts Infant Asylum, when it was found from experience that no care could prevent a very large mortality when infants were brought up "by hand" only. All the more delicate babies were given a share of breast-milk, while the wet-nurse's own child was never entirely deprived of its proper nourishment. Under these arrangements the number of deaths decreased enormously, and during 1883 they amounted to less than 11 per cent, a result on which the managers may certainly be congratulated.[1]

It may be worthy of record that this asylum was started chiefly by the exertions of Dr. Lucy Sewall, in 1867, in consequence of the great mortality found to occur among the children born in the New England Hospital for Women and Children, soon after they left that institution.

[1] *Seventeenth* Annual Report of Massachusetts Infant Asylum, *1884, Boston, U.S.A.*

When the subject came to be investigated it was found that an even more frightful mortality existed at the State Alms-house (poor-house), "sometimes amounting to *ninety per cent!*"[1] At the time of its foundation I was working as a student under Dr. Sewall in Boston, and I remember well that though the mortality sank at once from the frightful figure above mentioned, it still remained excessively high (from 45 to 55 per cent for the first 300 infants received), so long as the managers endeavoured to bring up most of the children by hand only, but sank to less than half this proportion when breast-milk was secured for the more delicate children. In 1881 the number of infants who had passed through the asylum since its foundation amounted to 1000, and the last 700 showed a varying mortality of from 11 to 30 per cent; the occasional occurrence of epidemics of measles, etc., being no doubt responsible for the higher numbers.

All experience concurs, then, in the conclusion that breast-milk should if possible be obtained for every baby. With reference to the choice of a wet-nurse I shall say nothing, as this ought invariably to be left to the doctor in attendance, for a selection made without medical assistance might be attended with terrible risks.

It may, however, be as well to give a word of warning about the diet of a wet-nurse. There is

[1] *Report of the same Asylum for 1879.*

a popular idea, by no means discouraged by the women themselves, that wet-nurses should live a life of positive idleness, and be fed on the fat of the land, with abundance of malt liquors, or stimulants in some other shape. Nothing can be further from the truth. In order to the formation of healthy milk it is necessary that the woman herself should be healthy; and the very sudden change from probably insufficient food to a liberal table, and from over-exertion to an easy life, involves in any case some risk of derangement of health; and the risk should be reduced to a minimum by a moderate and very simple diet, with a fair amount of work or exercise in some form.[1] Alcohol in any shape is distinctly undesirable (unless given for any special reason by medical orders), and a good plain diet of farinaceous food, porridge, etc., with one meat meal in the day, and plenty of milk or cocoa to drink, is far more desirable for the woman herself, and for the baby dependent on her, than any more luxurious fare. The supper should always consist of well-made gruel, with plenty of milk, and of nothing else.

Whether the infant is suckled by its own mother or by a stranger, it is equally important that the general health of the milk-provider should be carefully guarded. Indigestion, constipation,

[1] *See Manual of Diet*, by Dr. King Chambers. Smith, Elder and Co., *1875*.

etc. in her are pretty sure to react upon the infant; and the safest way to secure its well-being is to see that her functions are healthily performed, and that therefore her milk will convey no injurious influence. No special dietary or regimen is necessary, but careful attention should be given to whatever promotes general health—*e.g.* a light but nutritious diet, including plenty of well-cooked vegetables or ripe fruit, moderate exercise, abundance of fresh air, etc. etc.

Not only is the nurse's physical health of vital importance, but it is most essential that her mind should be quiet and undisturbed by passion. Many cases are on record where sudden rage or terror so altered the character of a woman's milk, that it became to the last degree injurious, and even fatal to the child at her breast. One instance is given of a woman who lost successively two children from violent convulsions, brought on by suckling after fits of passion.[1] Another case is recorded of a mother who was terrified by a struggle between her husband and another man, and who at the time suckled a child, perfectly healthy till then, with the result that it died within a few minutes, while still at the breast.[2] After these warnings it is clear that no mother can be too careful to preserve her own equanimity; or, if needful, to select as wet-nurse a woman of calm temperament.

[1] *Cazeaux's Midwifery.* American edition, Philadelphia, 1857.
[2] *Combe's Management of Infancy.*

If, however, breast-milk is unattainable in any given case, it is necessary to consider the best available substitute. The whole tribe of so-called "infants' foods" may be excluded at once from the enquiry, for the simple reason that they all contain starch in some form or other; and for the digestion of farinaceous food it is necessary to have a plentiful secretion of saliva, which is not developed in the infant for some months after birth. Dr. King Chambers, who is probably the greatest living authority on diet, writes: "Laputa never devised anything more preposterous than Liebig's Food for Infants;"[1] and yet this is probably the best of the kind, as in it the starch is partially converted into dextrine, and may therefore be digested to some extent. At a later period this, and other foods of the kind, may be very useful, but for infants a few weeks old they are simply absurd. Dr. Cheadle, physician to the Great Ormond Street Hospital for Sick Children, bears similar evidence[2] against even the so-called "milk foods," which are so far an improvement that they do contain some desiccated milk in addition to farinaceous ingredients; but the proportion of digestible nitrogenous matter and of fat is far too small. He writes: "The result of feeding children on such food alone is what might be inferred. They are flabby, soft-fleshed, pallid; liable

[1] *Manual of Diet.* Smith, Elder, and Co.
[2] *The Book of Health.* Cassell and Co., 1883.

to bronchial and intestinal catarrhs; have feeble resisting power against acute disease; are deficient in vitality and vigour, for lack of nitrogen. Moreover, from deficiency of fats and salts for bone-making, and albumen for muscles, they are constantly rickety, develop imperfect teeth and get them badly; and in one instance within my knowledge a child fed on this food alone developed actual scurvy of severe degree." Of those fed on mere starch foods (without milk) he adds: "They are always hungry, always crying for food; in spite of the large quantity they take they waste more and more, and unless some addition is made they die of atrophy. They are starved to death, fed on starch, which they cannot digest. These wretched children were known at one hospital as 'corn-flour children.'"

I doubt whether any one cause contributes, at least among the poor, so largely to infantile mortality as the use of these "foods," or of some form of starch, which, being unassimilated by the immature digestive organs, leaves the child simply in a condition of starvation, that would probably be absolute but for the small quantity of milk generally mixed with such so-called "food." What the child cannot digest simply irritates the digestive tract, as sand, or any other "foreign body," might do, and the wretched infant is injured by what the ignorant mother supposes *will nourish it.* Hardly a week passes without

my being called to treat some of these poor little victims of corn-flour or arrowroot, or "infants' foods" of some sort, whose frames have been starved, and intestinal canal irritated, by such utterly inappropriate diet. Sometimes in delicate children the results are absolutely fatal, but usually, if one can get hold of them at a fairly early stage, the entire cessation of such feeding, and the abundant supply of good milk, is (with little or no medicine) sufficient to secure recovery.

The choice then lies between the various forms of milk, which is the *only* natural food for all young mammals; and when human milk cannot be had some other must be selected. That of the goat is rather nearer than any other to the composition of human milk, but it is richer both in casein and in fat, and is therefore less easy of digestion. That of the ass again is much poorer in these ingredients, and therefore more easily digested by a feeble stomach; but it is useful rather for exceptional cases of illness than as an ordinary food for a healthy baby. As, however, in any case, neither ass's nor goat's milk is available in sufficient quantities for general use, we are practically restricted to a choice between the fresh milk of the cow, and the various forms of condensed milk.

*A table giving* the composition of the different *kinds of milk* may be useful here in estimating

the value of the alternatives offered. As the various analyses of milk differ very considerably, I have endeavoured to give a fair average in each case. That of condensed milk is the average result of analyses of three different brands of the best kind.[1]

COMPOSITION OF MILKS.

| | Human. | Cow's. | Ass's. | Goat's. | Condensed (as sold). | Condensed (diluted). |
|---|---|---|---|---|---|---|
| Casein (or curd) . | 3·1 | 4·5 | 1·8 | 4·0 | 17·3 | 3·5 |
| Fat . . . | 3·5 | 3·6 | 1·3 | 4·4 | 10·5 | 2·1 |
| Sugar . . | 4·6 | 4·5 | 6·2 | 4·7 | 43·3 | 8·6 |
| Salts . . . | ·3 | ·7 | ·3 | ·6 | 2·9 | ·6 |
| Total solids | 11·5 | 13·3 | 9·6 | 13·7 | 74·0 | 14·8 |
| Water . . | 88·5 | 86·7 | 90·4 | 86·3 | 26·0 | 85·2 |
| | 100 | 100 | 100 | 100 | 100 | 100 |

The *first* column gives the average composition of breast-milk, which must be taken as our standard. The *second, third,* and *fourth* columns show how far the milks of the cow, ass, and goat resemble that of the human mother. The *fifth* column gives the average composition of tinned milk, of the best kind, as sold in shops; and the *sixth* column shows the result of diluting

[1] For the analyses from which this table is compiled see the following works:—Pavy *On Food and Dietetics,* Churchill, 1875; Letheby *On Food,* Baillière and Co., 1872; Smith, Foods, H. King and Co., 1877; Hassell, Food and its Adulterations, *Longmans, 1876.*

this preparation with four times its weight of water, as by this means it can be brought most nearly to resemble the composition of fresh milk.

It will be seen that cow's milk differs from human milk chiefly in its larger amount of nitrogenous matter, casein, or "curd"; this curd is also of a firmer quality, and less flocculent than in human milk; and in fact we find that, when cow's milk disagrees, it is just because of the larger amount of casein, which may form an insoluble curd in the stomach, and may be vomited in that form. The amount of fat is nearly the same in both cases.

The condensed milk, on the other hand, has a medium amount of casein, but much less fat than either human or cow's milk, and very much more sugar. The greater sweetness explains the readiness with which infants will take condensed milk, and also the frequency of digestive derangements during its use. The deficiency of fat is probably a very great disadvantage to babies who are fed upon it.

It is not quite certain how far the processes to which condensed milk has been submitted affect its value, apart from the chemical analysis given above. There is very considerable difference of opinion in the medical profession respecting the value of these preparations as a food for *infants, and* some very emphatic warnings of *possible danger* have been given. The following

testimony from Dr. Neale certainly deserves attention :—"It must occur to any observer that condensed milk, with its excessive saccharine element, is an unnatural food, and experience has abundantly proved to me, since the introduction of condensed milk in 1868, that children so brought up often look the picture of health so far as fat goes, but that too frequently the bones become rickety, the skin loaded with eruptions; and, fortunately for the ill-fed victims, that comparatively slight illnesses carry them off at an early age, thus saving them the misery of prolonged ill-health."[1]

I do not think that the subject has as yet been exhaustively investigated; but it seems sufficiently clear, from a simple perusal of the table given above, that cow's milk, freshly drawn from a healthy animal, is a safer resource than any condensed milk can be; and experience seems certainly to point in the same direction; though no doubt condensed milk may be very useful when good fresh milk is not to be obtained.

If, then, breast-milk is unattainable, good cow's milk should be diluted with rather more than its bulk of warm water, and given to the infant in one of the old-fashioned flat feeding-bottles with a nipple at one end. This is preferable to those with a tube, because it is extremely difficult to

[1] *British Medical Journal*, 18th October 1879. See also discussion in the *Lancet*, 1872, Vol. II.

keep the tube perfectly clean and sweet, and the slightest sourness will risk derangement of the baby's stomach. There is no doubt, however, that bottles with tubes are more convenient for use in the baby's cot, and there is little objection to them if scrupulous care and cleanliness are enforced. If employed at all, there should be two or three such bottles in use; and each must be thoroughly cleansed as soon as emptied; and left with cold water in it till again required. The tube should be purified with especial care, and a new one obtained if the least sourness becomes perceptible. A little sugar is often added to the milk, and, as human milk is slightly sweeter than that of the cow, this is allowable enough; but the ordinary sugar is apt to disturb a delicate baby's digestion, and in that case the "sugar of milk," which can be obtained from any good chemist, is preferable. With healthy children, however, this precaution is hardly necessary.

It has been already said that cow's milk will not always agree with babies, and in this lies one of the difficulties of bringing up by hand. As, however, the excess of casein in cow's milk is almost always the cause of disturbance, a very ingenious process for getting rid of the difficulty has been suggested by Dr. Frankland,[1] and as this process rests on the most satisfactory scientific

[1] *Experimental Researches in Pure, Applied, and Physical Chemistry*, by E. Frankland, Ph.D., D.C.L., F.R.S. London, *1878: Van Voorst.*

basis, and has also stood the test of practical experience, I think it worth while to give it in full, with the added testimony of Mr. Walker of Spondon,[1] who says: "With Dr. Frankland I can affirm that I have saved the lives of sundry children, that would assuredly have died without this artificial milk." The object in view is of course to get rid of the excess of casein (*i.e.* about one-third of the whole "curd" of cow's milk), and this is accomplished as follows:—

*Frankland's Artificial Milk.*—Take half a pint of new milk and let it stand about twelve hours. At the end of this time skim off the cream, and add the cream to a pint of perfectly fresh new milk. To the half pint of skim milk add a piece of rennet about an inch square, and let the vessel containing it stand in hot water till the milk has thoroughly curdled.[2] Remove all the curd, which it is our object to get rid of. To the remaining whey, add a little powdered sugar, warm it, and then pour it into the pint of new milk to which the cream has been already added. In this way we shall have obtained a milk which contains all the cream and salts of the pint and a half of new milk, but only two-thirds of the casein; and with a little added sugar, this fluid will very closely approach the composition of the human milk, which

[1] *Lancet*, 23d August 1884.

[2] As soon as the curdling commences the rennet should be removed, and put aside in an egg-cup for future use, as it can be employed daily for a month or more.

constitutes our ideal. The quantity thus prepared will probably be rather more than enough for the daily wants of an infant, at any rate for the first month or two. No dilution is necessary.

For healthy children, however, good cow's milk, diluted with its own bulk of hot water, will usually suffice. The milk itself should not, I think, be boiled, as this seems to encourage constipation. Indeed boiled milk has such an effect on the bowels that in cases of slight diarrhœa in infants this alone is a sufficient corrective.

It is right, however, to mention that a very high authority[1] advises that all infants' milk should be boiled as soon as it comes into the house, on the double ground that the curd is rendered more flocculent, and that protection is thus afforded against possible infection, as disease germs appear to be destroyed when heated to boiling point. No doubt the latter argument is of very great weight during the prevalence of epidemics, or whenever the milk is liable to suspicion; but, if milk which is undoubtedly pure and wholesome can be secured, I cannot but believe that it is better to give it in its natural state. If fresh milk is found to disagree, it may, however, be worth while to try the experiment of boiling it.

Having, then, arrived at the conclusion that mothers' milk is by far the best food for infants,

[1] *Dr. W. B. Cheadle, The Book of Health.* Cassell and Co., *1883.*

and that, failing this, the milk of some other animal is the only allowable substitute, the remaining points to be considered are the quantity required, and the intervals at which meals should be given.

It is of very great importance that food should from the first be given at regular intervals, whether that food be obtained from the breast or from a bottle; and for a new-born child the interval should be about two hours, when the child is awake. It should never be awakened for food unless by medical orders; when it really wants food it is pretty sure to wake up of itself. As age advances, the intervals may be prolonged (as the quantity taken each time will increase), and at the age of three months an interval of three hours, and at five or six months four hours, may elapse between meals. But I cannot too strongly urge, alike for the sake of the child and of its mother or nurse, that milk should never be given at other than the appointed hours, simply because the baby cries. If this is done, the child is absolutely taught to cry, and it soon learns its lesson, to the destruction of its elders' comfort and the ruin of its own digestion. The stomach of a baby, as of an adult, requires intervals of rest; and if it is not allowed them it soon obtains them for itself by setting up diarrhœa or vomiting, which it is a great deal easier to establish than to cure, and by means of which many an over-fed *baby is brought* to the verge of starvation. From

the point of view of mother or nurse the policy is simply suicidal; the breast or the bottle is given at the first cry, "to quiet the baby," and in a little while the baby has learned to cry almost continually. Another point of importance is that when food is given with regularity the baby itself can be pretty well trusted to decide on the quantity required. It will never over-fill its stomach at one time, and if the proper interval is observed it will be duly emptied before the next supply is given. As soon as the baby ceases to suck it should be removed from the breast or bottle; and in the latter case care should be taken that any milk remaining should be emptied out, the bottle thoroughly cleansed, and a fresh supply given next time.

Certainly in my own practice, especially among the poor, the two main causes of illness in babies are connected with their dietary, and consist in (1) the administration of other food than milk; and (2) in the irregularity with which even milk is given. These two causes jointly produce in my experience more illness, and in the long run more fatal results, than the whole list of infantile diseases, including zymotic fevers, croup, and lung affections, all put together; and, if these two sources of evil were eliminated, I believe that infantile mortality might at a blow be reduced by one-half.

*The* above remarks apply of course only to the *earliest months* of an infant's life. The time will

come when milk is no longer the only proper food; and when the child's organism is, by the development of new secretions and new powers, capable of digesting farinaceous and other diet. Nature herself points out when this period has arrived. About the fifth or sixth month the baby begins to "dribble" at the mouth (which has hitherto been less moist than that of a grown person); in point of fact it begins to secrete *saliva*, the digestive fluid which is especially designed to effect the digestion of starch and its compounds. The teeth will soon be coming, but it is not needful to wait for their appearance before giving small quantities of rusk, tapioca, arrowroot, or biscuit powder, thoroughly softened and boiled in milk. Milk gruel made of fine oatmeal is also excellent. It is of course well to make the change gradually, so as to cause the least possible amount of disturbance. Such food may be given with a spoon, once a day for the first week, twice a day for the second, and so on until a semi-solid meal may alternate with one of milk; and thus gradually the breast or bottle be given up by the end of the ninth month. It is of course convenient to begin by giving such food at night, as the mother is thus spared needless disturbance, if she suckles the baby.

With reference to night-feeding it may be well to warn mothers and nurses against the common *custom of keeping* milk, or milk food, warm over

a night-lamp in the nursery. Dr. Cheadle most truly remarks that "the heat is insufficient to keep the liquid simmering, the gentle warmth favours fermentation, and the food turns sour." Hot water may be kept warm in this way, but the only right plan is to keep all food outside of the nursery—by an open window if possible—and to warm up each time only as much as will be consumed. If any is left, it should never be warmed a second time. It can hardly be necessary to protest against the abominable plan, which yet has been actually advocated in a text-book of advice to mothers, of keeping a bottle of milk *in bed*, and letting the baby suck it at intervals, without change or renewal! As a matter of course, fermentation sets in before the night is half over, and no wonder need be felt if the baby suffers in the morning from sickness and diarrhœa.

The amount of food is gradually increased, and the amount of suckling diminished up to the ninth month, when all lactation should cease; and if the process has been gradually and carefully conducted, the much-dreaded time of weaning will pass with little or no disturbance. It ought to be clearly understood that human milk ceases to be a desirable food soon after this period, and that if the mother postpones the date of weaning, she is injuring her child, and also probably her *own health.* "Nature is conquered by obeying *her," and it is* just as unnatural and unreasonable

to suckle a child with a mouth full of teeth, as it is to force starchy foods into the system before saliva and pancreatic juice are provided for their digestion. One word of caution may be desirable about giving babies crusts of bread, or pieces of biscuit, to suck and chew when the teeth are coming. A good many dangerous accidents have happened in consequence of this practice; pieces of bread or biscuit being broken off roughly and imperfectly swallowed, so that choking has ensued, and the baby's life been imperilled. It is always safer to envelope the food in a little bag of net or muslin, and to see that it is safely fastened by a string to chair or table, so that the baby cannot push the whole down its throat.

I have been asked to specify the kinds of "Infants' Food" which I should recommend, but I think it better not to make any selection, as I do not believe that one differs greatly from another in value, and most mothers and nurses have their own favourites. I doubt whether any of them are better than the simple articles already named, and I believe that a healthy infant may be brought up perfectly well on any simple farinaceous food with an abundant supply of milk. In the case of a sickly child the doctor's special advice should be obtained. I will, however, mention in detail two of the household preparations which have stood the test of experience, *and may be safely* recommended.

1. *Yorkshire Infants' Food.*—Take equal parts of flour and oatmeal (the latter of medium coarseness), mix well together, and put them into a pudding cloth which has been dipped in boiling water. Tie firmly and tightly, and put the whole into a saucepan of boiling water, to boil four hours. When taken out, remove the cloth, and leave the ball contained in it to cool. When cold, peel off the outside skin; grate the remainder of the ball into fine powder, and put this away in a well-closed canister. When required for use, take a table spoonful of the powder and mix it with milk, boil for ten minutes, stirring all the time, and add enough sugar to make it palatable. The consistency may vary, so that it can be given either from a bottle or with a spoon. This food is excellent for healthy infants, but oatmeal should be avoided in cases of diarrhœa.

2. *Scotch Baked Flour.*—Tie up a pound of flour in a cloth, boil it for three hours, and then bake it in a cool oven all night. Peel off the outer layer when cold; and what remains may be used as required, by scraping off as much as is wanted, and making it into a paste with boiled milk.

Though milk is no longer now the right food alone, it is still, and will continue for some years to be, one of the most important constituents of the child's dietary. Milk puddings without eggs, *bread and milk*, rusks soaked in milk, are the *standard and* most appropriate dishes for a child

until it can run alone; and, though some additions may be made to this dietary by the middle of the second year, when the child can enjoy bread and butter, and biscuits, and drink its milk separately, I believe it is still wisest to make farinaceous milk-foods the staple of its meals, until it is three or four years old. The earliest additions may be in the shape of ripe or stewed fruit of an easily digested kind, or of well-cooked green vegetables, with occasionally a light-boiled egg. Next may come wholesomely-made preserves, or virgin honey, with a larger range of fruit and vegetables, simple buns and cakes (at least one day old), and a greater variety of puddings. Some parents are in a great hurry to give meat and fish to their children, and fancy that they are imperfectly nourished till they get such food; but in my experience the best nourished children are those who have little or nothing of the kind until they are five or six years old, and who up to that age have an abundant, but quite simple, diet of the kind I have described, with no pastry and few sweetmeats, and an unlimited supply of milk.

In this connection it may be well to mention that the hideous disease known as Rickets, or *Rachetis*, which is fatal to the strength and symmetry, if not to the very life, of such thousands of our infant and juvenile population every year, has been proved to be, in the main, *due to the deprivation* of milk. Not only do we

see this practically illustrated every day in the lanes and back streets of our towns, where bowed and distorted limbs ("bandy legs") are so sadly common, but the fact has been proved to demonstration by a most interesting series of experiments conducted by Mons. Jules Guérin in France.[1] He found that children suffering from this disease had almost invariably been deprived of milk; and he then proved experimentally that the disease could actually be created at will in the lower animals, by simply depriving the young of their mother's milk, and giving them the food that would have been proper for their parents. He took puppies, as specimens of carnivorous animals, and fed them on meat; and young pigs, as representing the herbivora, and fed them on vegetables, and in each case rickety softening of the bones was produced, with the accompanying bowing and distortion with which we are so sadly familiar. Unfortunately the same experiment is being daily made—ignorantly and unconsciously—with the young human animal, and the result is not dissimilar.

[1] *Manual of Diet*, by Dr. King Chambers. Smith, Elder, and Co.

## CHAPTER III.

### THE NURSERY.

To those who consider the care of their children a primary interest and duty, the nursery is the most important room in the house. Infants pass a large share of their time in this apartment, both by day and by night, and the aspect of the room and its arrangements, both for warmth and ventilation, are of the greatest consequence. It is much better, if possible, to have two rooms near each other, as day and night nursery; and at least in the former, it is desirable to have two windows with different aspects, one of them being to the south, and the other either to the east or west. In this way a larger amount of sunshine can be secured during the day, and a more thorough ventilation effected when the room is empty, by means of a "thorough draught." All windows should of course open from the top as well as from the bottom, and in genial weather the window facing the south should always be more or less open, care being of course taken to avoid draught.

It is quite beyond the scope of the present little work to enter into a full description of the function of Respiration, and those who would thoroughly understand it must consult the standard works on Physiology,[1] where long chapters are devoted to the subject. It must for the present suffice to define respiration as the vital act by which Oxygen is introduced into the system, and Carbonic Acid discharged from it. This supply of oxygen is essential to the functions of the body, and it is equally important that the carbonic acid, which is a most fatal impurity, should be removed. Both these processes are mainly performed in the lungs, which consist of masses of little air-cells round which are wrapped the capillaries, or smallest blood-vessels. The division between the air-cells and the capillaries consists of an extremely thin membrane, and the fresh air admitted into the air-cells lets its oxygen pass readily through this membrane into the blood contained in the capillaries; while the carbonic acid passes away from the capillaries into the air-cells, and is expired, or given out, with the breath returning from the lungs.

A double process is thus being constantly performed; with each Inspiration, or drawing in of air, oxygen passes into the system; at each Ex-

[1] See the works of Carpenter, Dalton, and Foster; or, for a *beautifully* clear explanation in comparatively small compass, *see Huxley's Elementary Lessons in Physiology*. Macmillan *and Co., 1878.*

piration, or breathing out, carbonic acid issues from the system into the surrounding atmosphere. If we examine the air which is breathed in, and breathed out, respectively, we shall find a corresponding difference in its composition. The inspired air has 4 or 5 per cent more oxygen than the expired air, and in the latter the place of this oxygen is almost exactly filled up by carbonic acid. When any air therefore is shut up, as it is in a room where respiration is going on, a constant and progressive change must be occurring. At each breath more oxygen is taken from the air, and more carbonic acid is poured into it, so that in time all the available oxygen will be exhausted, and the air will become so full of carbonic acid that no living creature could exist in it. The body may be deprived of food and drink for many hours and even days, and may yet survive, but death must follow in a very few minutes unless oxygen is constantly supplied and carbonic acid constantly excreted. For both these processes pure air is essential,—air, that is, which has its full share of oxygen, and which is not overladen with carbonic acid.

It has been ascertained that pure air contains rather more than 20 per cent of oxygen, and only about ·04 (or four parts in ten thousand) of carbonic acid. When air contains as much as ·1 per cent (or one part in a thousand) of carbonic acid it is no *longer wholesome*; and when it reaches 1 per cent,

headache and sickness are produced;—the early symptoms, in fact, of narcotic poisoning. From five to ten times this amount is fatal to life, as in the terrible instance of the Black Hole of Calcutta.[1]

I have given the above little sketch of the function of respiration, in the hope of impressing forcibly on mothers and nurses the extreme importance of a constant supply of fresh air, both in the day and night nursery. No baby can possibly be healthy unless his lungs have every facility for taking in all the oxygen he needs, and for getting rid of all the carbonic acid that he exhales. If he is shut up in an un-aired nursery, the unfortunate baby is compelled to breathe over and over again the air that has just come out of his own lungs, or those of his nurses or of other children, charged as we know it must be with all sorts of waste products and impurities. Many minor illnesses in babies arise from no other cause. They become sleepy and look stupid, and have not their proper appetite for food, for the simple reason that their brains and bodies are suffering from vitiated air, which is quite inadequate to keep them in health. Dr. Combe maintains that impure air is in his experience the main cause of convulsions, and that the best of all remedies for this alarming illness is improved ventilation and abundant fresh air.[2]

[1] *See Parkes' Practical Hygiene.* Churchill, 1873.

[2] *Management of Infancy.* Maclachlan and Stewart, Edinburgh.

Though I have spoken only of carbonic acid, as this is the chief impurity in expired air, the evil is greatly aggravated by the organic matter discharged with it from the lungs, which in itself has been proved to be highly poisonous.[1] The only way to escape the bad effects of these impurities is to have the air of a room constantly renewed, so that it may never be polluted to a dangerous extent.

The source of fresh air must of course be practically the external atmosphere, and in an ideally equable climate there would be no difficulty in the matter; as, where neither heat nor cold nor damp has to be avoided, Nature teaches man to live almost entirely in the open air; and here the supply of oxygen is unexhaustible, while carbonic acid is imperceptibly dispersed. But in a climate like ours we must guard against various dangers, and yet must not sacrifice the main object in view.

I have already said that all nursery windows (and indeed all windows without exception) should be made to open from the top as well as from the bottom, and, when a room is to be thoroughly aired out, both sashes should be opened to their full extent. If you hold a couple of tapers at the upper and lower openings of a window respectively, you will find, even in a calm day, that the lower flame is blown inwards and the upper flame is blown outwards, the fact being that the heated and im-

[1] Parkes' *Practical Hygiene*.

pure air is leaving the room above, and the fresh cool air is coming in below. People often think that when they open one sash widely they have done all that can be desired; but they forget that where only one aperture exists the two currents must meet and impede each other, just as is the case when a stream of people entering a building is met in the doorway by another stream coming out. Every one knows that in such a case two small doors will be infinitely better than one large one; and when air is in question this is still more the case, as the hot air, being lighter, mounts to the top of a room, and can only slowly and with great difficulty find its way out of a single opening far below, which is already occupied by the denser current of cold air that is forcing an entrance. It is, indeed, much easier to let fresh air into a room than to get all the impure air out; and, if only one opening is to be had, it is better to have it as high up as possible, so that no considerable stratum of impure air may remain above the level of the outlet. When windows are low down the room is hardly ever properly aired out, and a peculiarly musty smell is almost sure to hang about such apartments.

Where two rooms are set apart for a nursery, the one intended for use in the day should be most thoroughly aired out, by opening all available *doors and windows* to their full extent, before the *child comes into* it. If by this means the room

has been made cold, the temperature must be subsequently raised by means of a fire or otherwise, but warmth is far too dearly bought at the expense of impurity in the atmosphere. In the same way, when the night nursery has lost its occupants, it should undergo a thorough airing, and then be warmed again before the baby is brought back for its next sleep. If two rooms are thus used alternately, it is possible to make the air sufficiently fresh without keeping a window constantly open; but, except in severe weather, it is much better to secure a constant current of pure air by keeping a window more or less open at the top, except of course during the baby's toilet. This is even more important at night than in the day; because, during the daytime thorough ventilation can be effected by means of alternate rooms, and doors at any rate are frequently open from time to time. If doors and windows are all shut at night, the sleepers must necessarily breathe and rebreathe the same atmosphere, which deteriorates steadily; and sleep under these circumstances will be much less wholesome and refreshing than when a sufficient supply of oxygen is sent to the brain. In ordinary weather no special precautions are necessary, for a healthy baby with warm clothes in a warm bed is not at all likely to take cold,—not half so likely as when its nursemaid stands gossiping at *a street corner.* It is always possible, however,

to draw blinds or curtains over the window, and this is much better than having curtains to the bed or cot. If extreme precaution is desired, a piece of wood may be fastened tightly across the top of the window-frame, and the upper sash opened behind this. No direct current will in this case enter the room, but a gradual supply of pure air will be admitted at the middle of the window, where a narrow space is left between the upper and under sashes, the air in this way being admitted vertically, and so as to preclude the possibility of direct draught.

A suggestion has been made by architects writing about nurseries [1] that "an aperture should be formed under the door that air may be constantly flowing from the passage to the fireplace, which is to be placed opposite." No doubt air would be abundantly admitted in this way (though air from passages is not generally particularly pure) but a doctor may well shudder at the idea of the risks incurred by the tender little limbs that begin to crawl about the floor in this direct current. Grown-up people have their heads well up above the draught, and their lower limbs well protected in broadcloth or ample skirts; but I should not like to be responsible for the unlucky baby of a year old, whose whole body is usually pretty near the floor level, if its nursery is to be *ventilated* in this style in our spring and winter

[1] *Our Homes.* Cassell and Co., 1883.

nates. I should advise, on the contrary, that doors should be made to fit very tightly, and floor-boards also (for unsuspected draughts ın come up from that direction), but that ıcient ventilation should be provided by a ıdow slightly open at the top, or by the current air rising between the sashes in the way I 'e already indicated. Chance ventilation is 'ays bad, it seldom suffices for its object, and it 'ays involves risks which ought to be avoided. The temperature of a nursery should be care- y regulated by the thermometer, and not by nurse's guesses, which are necessarily affected her own feelings, depending very likely on ely subjective causes. It is neither possible necessary to keep the temperature always the ıe throughout the year; nor indeed is it desir- ɜ to do so, as a healthy child should always taken out on a fine day, and the change would too great in spring and winter if the rooms . been kept up to summer heat. It may, ɾever, be said generally that a nursery should fall below 55° Fahrenheit in winter, nor rise ve 70° in summer. A medium temperature rom 60° to 65° is the most desirable.

During the greater part of the year it will be l to have a fire in both nurseries, as when h air is properly admitted some artificial aid ıeeded to keep the rooms comfortably warm. *infant has not* much power of movement, and

therefore is deprived of one chief source of heat, and exposure to any chill is more dangerous for it than for adults. A proper guard round the fire is essential as soon as the child begins to crawl about; and all matches, or indeed dangerous novelties of any kind, should be put carefully out of its way, as the young mind is naturally and properly anxious to investigate everything within its reach.

More care should also be taken than is usually the case to keep away from a baby all playthings, balls, pictures, etc., that are coloured with poisonous paints. An infant's first instinct is to put everything new into its mouth, and a considerable amount of lead, arsenic, or similar deadly substances may thus be introduced into its system without any suspicion on the part of its mother. When there are elder children in a nursery, they often have a toy paint-box, and the colours are not unfrequently dropped on the floor, and so may readily fall into the baby's hands. I only the other day heard of a young child who was found composedly sucking a cake of white lead, and a little delay in the discovery might have easily led to fatal results. A word of caution may also be necessary about the cheaper kinds of "corals" with bells suspended on them; these toys are often very insecurely fastened together, *and I know of* one baby who was almost choked *by a loose bell* which it had swallowed.

No washing or drying of linen, or cooking operations of any kind, should be allowed in a nursery. It is very convenient to have a water-tap and a sink within easy reach, but nothing of the sort should be in the room itself; and especial care should be taken that any water-closet on the same landing should be in perfect order and thoroughly trapped.

Nurses are often very fond of keeping soiled clothes in a nursery, and sometimes actually under the bed, but anything of this sort should be rigidly forbidden; and food also of all kinds should be banished, except at meal times. Milk can generally be kept in some adjoining room, or in the passage on a table by an open window (looking north if possible), and only as much as is required for each meal should go into the nursery.

Gas also should be considered inadmissible, for more than twice as much oxygen is consumed by a gas-burner as by a human being, and the air thus becomes vitiated much more rapidly than when candles or colza oil are used. If the time ever comes when the electric light is a familiar household luxury, it will probably be found particularly suitable for nurseries, as it does not consume the air as gas does, and is even said to have a beneficent effect, second only to that of sunlight, as regards vegetation, and therefore possibly also as regards animal life.[1]

[1] *Dr. Cheadle. Book of Health.* Cassell and Co., 1883.

In the meantime, however, it is quite certain that sunshine is of the utmost possible importance in a nursery, and that no children will grow up healthy and robust who have not abundance of it. It is not so easy to say exactly in what way the rays of the sun exert their beneficial influence, but we know that plants become blanched in a dark cellar, and we see a very similar result in the children bred in narrow alleys and closes where the sun seldom shines. It appears that sunshine is in some way essential to the perfection of the red blood corpuscles, and only pallid cheeks will be seen among the dwellers in cellars or dark rooms. Those who wish for rosy children will make sure that their nurseries are flooded with sunshine, and that blinds and curtains are never allowed to keep it out, unless positive inconvenience is occasioned, and then only very temporarily.

Of course, if only one room is available as a nursery, it is even more important to keep it thoroughly ventilated, and at the same time at a proper temperature; and advantage must be taken of the baby's absence in its mother's room, or out of doors, to open all doors and windows to their utmost limit; though, in cold weather, only for a few minutes at a time. If a baby is to live and sleep almost entirely in one room, no care *can be too great* to ensure absolute cleanliness in *every detail,* and perfect purity in the atmosphere.

Cleanliness in all respects is of paramount importance in nurseries. It is well to have the walls painted, or hung with a glazed paper that can be washed with soap and water; and children greatly appreciate a few bright pictures round the walls. The floor should not be covered with a fitted carpet, but should have one only in the centre, so that it may be easily and frequently removed, and thoroughly cleansed or beaten. There should be few curtains and little drapery of any kind. Simple furniture that will not gather dust is to be preferred, and no store-closets or receptacles for more than daily clothing should be permitted. Whatever there may be in a nursery should be thoroughly emptied out (including every press, drawer, and cupboard,) at least once a month, and the whole submitted to a most efficient cleansing.

Only washing dresses should be worn by those in attendance, and no nurse should be allowed to keep any of her own clothes in the nursery; nor indeed to bring anything into it which is not required for the child's daily use. In many a nursery, in even good houses, a musty and unwholesome smell is immediately perceptible to delicate nostrils; and, if the cause is hunted to its source, it will generally be found in accumulations of soiled clothes under the beds, or in cupboards; or in wardrobes full of the nurse's property that *never should* have come into the room, or in

closets stored with odds and ends of food, or other things that ought not to have been placed there. All these engender an unwholesome atmosphere, in which no baby can flourish as it would in one of perfect purity; and many minor illnesses, and many doctors' bills, would be spared to mothers if they would resolutely keep needless drawers and cupboards out of their nurseries, and see that whatever furniture is there is kept in a condition of absolute cleanliness.

## CHAPTER IV.

### EXERCISE AND REST.

No sooner is a child born than it begins to exercise its various physical powers in a greater or less degree. It generally enters the world with a cry that expands its lungs and exercises the muscles of its chest, and it often begins to move its arms and kick its legs before it is entirely separated from its mother. Such motions of the surface muscles, and of the limbs, are of course the only exercise that an infant can take during the first few weeks and months of life, and it is of great importance that its clothing should be loose enough everywhere to allow of the freest possible motion. This is of the utmost moment, not only for the sake of the child's comfort, but for its growth and increase in strength. A high authority[1] tells us that "the ordinary rate of nutrition of the muscular tissue depends upon its functional activity," and this is as true in infancy as in later life. If it were possible to swathe a

[1] *Carpenter's Human Physiology*. Churchill, 1864.

baby so tightly as to prevent it altogether from moving its limbs, their development would be indefinitely retarded, even if permanent disease were not induced. Nature intends a baby to pass a large part of its time in sleep, but when awake she intends its activity in a quiet way to be almost incessant, and it is our business to see that none of our arrangements in the way of clothing or otherwise are calculated to balk her design. In the last century it appears that infants were in positive danger of their lives from swaddlings carried to the extent of suffocation; for Dr. Smellie[1] records one fatal case, among others, in which the baby was found at the point of death, "groaning, with scarce any pulse, the extremities growing cold, and the countenance pale," and, relief having come too late, it died very shortly. "The nurse in her own excuse told me that she was told the London nurses dressed them so, to give them fine shapes!"

It appears also to have been the fashion in old days to consider it necessary to imprison a baby in the nursery for some weeks, if not months, after birth; and as in those good old times ventilation received less attention than it does now, we have here probably one secret of the extraordinary infantile mortality, which surpassed greatly even that of our own day. We are told, on the authority of M'Culloch's *Statistics of the British*

[1] *Smellie's Midwifery*, vol. iii. London, 1764.

*Empire*, that in the twenty years from 1730 to 1750 the total deaths under five years of age amounted to more than 74 per cent of the total births during the same period.[1] Dr. Underhill also tells us[2] that during ten years (unspecified) in the last century "the average of births within the bills of mortality was 16,283, out of which were buried under five years of age 10,145," or about 62 per cent.

In the present day we find it unnecessary thus to deprive a baby of fresh air and sunlight. I never hesitate to allow a healthy child to be taken out into the sunshine on the second or third day of its existence, if the season is mild and the weather fine, and I have never seen the least harm from such a practice. Of course in winter more precaution is necessary, and care should be taken to choose a specially mild day, with no violent wind, for the first trial, which should be made if possible while the sun is shining. The only precaution I would suggest, beyond warm and light clothing, is due protection to the eyes, which in the early days of infancy are very tender and likely to suffer from glare, but a shady hood, or a carefully held parasol, will give them all needful shelter.

Our modern times have some special dangers of their own, and I suppose in these days of use

[1] Dr. Andrew Combe's *Management of Infancy*.

[2] *Treatise on Diseases of Children*, by Dr. Michael Underhill. London, 1799.

and abuse of perambulators, it is necessary to say that a young baby should be in deed as well as in name "an infant *in arms*," and that it should never be held except in a recumbent position. It needs the warmth and support all round it which are furnished by kindly human arms, and which are wholly wanting in the wood and leather substitute. The truth is that perambulators are excellent things, if used with discretion, for children of nine months or a year old; but no child should ever be put to sit in one till its little back has strength for the upright or semi-upright position, and till it is able to some extent to change its own attitude at will. Every child-loving woman must, I think, have felt many a heart-ache at the sight of wretched infants who had fallen forward or sideways from the impossible positions in which they were propped by a stupid nursemaid, and whose little heads were swaying at danger of dislocation over the strap of the apron, or one of the sides of the carriage. The immature vertebræ and dorsal muscles have not the strength for the upright position (and this should be remembered equally for an infant in arms), and the child has neither the intelligence nor the muscular force needed to change to a posture of comfort. Quite recently, however, "bassinette" perambulators have been introduced for young infants, who can thus be taken into the air in a reclining position, and

their use of course obviates most of the objections referred to. In cold weather it is a good plan in either kind of perambulator to have a hot bottle or tin at the infant's feet.

One other warning must be given, though, but for experience to the contrary, one would think it surely unnecessary,—viz. that a perambulator containing a baby must never be jolted down the steps leading from a hall-door, or elsewhere. Only a few days ago I saw a wretched infant undergo a succession of violent shocks by being taken in its perambulator down a flight of area steps, each descent being marked, of course, with a sharp concussion that must have been most injurious to spine and brain. Even the jerk involved in taking a perambulator on and off a pavement is very undesirable.

It seems, by the bye, almost incredible that it should be necessary to say that young babies are not to be tossed violently up into the air, but as I heard of a death resulting, only the other day, from this idiotic practice, it seems needful to advert to it. The immediate cause of death was no doubt concussion of the spinal cord, as yet very imperfectly defended by the partially developed vertebræ. When the backbone has grown tough and strong, there may be no danger in a gentle toss, but during early infancy it is out of the question.

To return to the perambulators. Even if the *body is at rest,* the poor little face is often exposed

to a scorching sun or driving cloud of dust, without a moment's thought on the part of the servant, who considers that her whole duty consists in pushing the perambulator, and who perhaps is reading or gossiping at the same time; her neglect arising not from any intentional unkindness, but from simple thoughtlessness.

For a first child, then, let no perambulator (except of the bassinette kind) be bought until it is near the completion of its first year; and in its earlier months let it be taken out lying in its nurse's arms, warmly wrapped up, if the weather is at all sharp, and carefully shielded from burning sun or rough winds. Under such conditions it will be much for the baby's advantage to go out every fine day; but it must be remembered that damp is much more dangerous than dry cold, and on any rainy or foggy day the nursery is the safest place.

It will of course be well to accustom the infant to the open air by degrees, and the first day ten or fifteen minutes will be enough to spend out of doors; but this time may gradually be lengthened, till at the age of six months a child will be all the better for passing at least half its waking time in the open air, if the weather is sunny and genial. By this time a baby may be beginning to crawl about, and if it is properly clad it will *enjoy itself immensely*, and without any danger, on *a smoothly shaven* lawn, if no rain has fallen for

the last two or three days. If there is the least suspicion of damp, it will be desirable to have a carpet or rug spread over the grass, but in perfectly dry summer weather this is quite unnecessary.

In all matters of development it is better to follow nature's lead than to press her forward. As soon as a baby's muscles are strong enough, it is sure to wish to crawl about; and it should not be invited to stand, or to walk, until it shows an inclination to do so. Children vary extremely in their rate of advance, and precocity is never to be desired, though parents sometimes think differently. "Slow and sure" is a good motto in the nursery as well as elsewhere, and our main business is to see that the baby is thoroughly well nourished, and lives in all respects a healthy life, so that, when the desire for further exertion comes, its powers may be adequate to meet the demand upon them.

One caution that may properly find place here is in respect to the extremely reprehensible custom that some nurses have of lifting children by one or both arms. The shoulder joint is exceedingly delicate in infancy; it is perfectly possible, and not very uncommon, to produce absolute dislocation by this means; and fracture of the collar bone is not unheard of. A child should be lifted by its body, the nurse's two hands being pressed gently on each side, a little *below the* arm-pits; and by attention to this

little detail discomfort, and even pain, will be spared to the child, as well as great danger avoided.

As I propose in this little book to confine myself almost entirely to infancy proper, which ends at any rate not later than the second year, I shall not go into the question of walking as a regular exercise. No wise person will take a child for a "walk" at so early an age; and all that we have to secure is abundance of out-door life, under conditions giving safely free liberty of movement, and at the same time allowing constant intervals of rest. A child gets too heavy to be carried just about the time that it acquires the power of regulating its own motions and positions; and after this date a perambulator in wise hands will be a mercy to the nursemaid and a benefit to the child. It is a very good plan to have a child taken a mile or so in this way, and then, if a suitable place offers, to allow it to tumble about on dry grass for a time before its return home; so that a lengthened period may be spent in the open air, partly in active and partly in passive exercise.

It may be well to say that, in towns where cemeteries exist, nurses must not be allowed to indulge their extraordinary predilection for these very unwholesome localities. Not long ago I had occasion to walk through a cemetery, and found there three or four parties of nursemaids

and children, the latter playing about, with their mouths and noses close to the ground, from which the odours of decomposition were perceptible to me even as I walked past. Those who feel any doubt about the dangers thus arising should refer to the testimony from many quarters quoted by Dr. Parkes;[1] but most people will see at once, when their attention is called to the matter, that places of interment are necessarily quite unfit for playgrounds, and will readily believe that many cases of unexplained illness in the nursery may be due to no other cause than this pernicious habit. It is, of course, unusual for the emanations from the graves to be so perceptibly offensive as in the above instance, but the absence of effluvia is no test of security, as poisonous gases and vapours may be imperceptible to the sense of smell.

As the periods of exercise increase with a child's advancing age, its intervals of rest will decrease naturally. For some weeks after birth a baby properly spends most of its time in sleep. The newspapers have recently reported a case at Birmingham practically amounting to murder,[2] where a child of six weeks old was literally, in the words of the coroner, "performed to death;" the wretched baby having been "exhibited for a long time during each day, and *kept awake the*

[1] See *Practical Hygiene*, Art. "Air."
[2] *Standard*, 22d August; and *Times*, 25th August 1884.

*whole time*," till it died from convulsions. I have not the slightest doubt that this most cruel and unnatural deprivation of sleep was the main cause of death.

It is well to introduce as much periodicity as possible into an infant's habits of sleep and rest. For a week or two after birth it will pass nearly all its time in sleep, except when actually taking food; but by degrees the intervals become longer, and it is then desirable to accustom it to sleep, as well as to eat, at regular times. Generally speaking, it is a good plan to amuse a baby for a few minutes after it has taken its milk,—as soon, that is, as it begins to "take notice,"—and then, after a quarter of an hour or so, to lay it down to sleep in a quiet and shady place. By degrees the quarter of an hour will double or treble itself, as the intervals between meals increase; and, by the time an infant is six months old, it will not sleep for more than fifteen or sixteen hours out of the twenty-four. It is well for the sake of mother or nurse to accustom it to take its longest sleeps at night, when the quiet and darkness are also most favourable; and, after the first few months, a healthy baby will readily sleep for four or five hours at the beginning of the night; and then, after suitable refreshment, will again sleep nearly *as long.* At the age of six months and upwards it will probably require three other sleeps in the

course of the day, each lasting perhaps a couple of hours; by degrees the earlier and later of these can be curtailed, and in time omitted, but the mid-day sleep should be made habitual at any rate until the child is two or three years old. In the middle of summer it is well to make this period of repose correspond to the hottest part of the day; but in cooler weather the noontide sunshine should always be a primary object, and the sleep should be arranged to take place either before or after an hour or two spent in the open air.

Whether for repose at night, or in the daytime, it is much better from the very first to accustom an infant to sleep in a little cot of its own, and not in the bed with its mother or nurse. If once the latter habit is acquired, it is very hard to break; and there are many reasons why it is healthier and better for a child to sleep alone. The best form of cot is that made of iron, with removable sides of lattice-work that admit the air freely, and yet prevent all risk of falling out. These sides should be taken out when the bed is made, and the mattress and bed-clothes freely exposed to the sun and air, for at least an hour before they are replaced in order. A feather bed is not desirable for a child, as it is apt to over-heat it, and to cause undue perspiration of the parts of the body that are immersed in it. A soft mattress of hair *or of wool is* much better, and the coverings

should consist of fine sheets and soft blankets only. Counterpanes and dûvets are both objectionable, because more or less impervious to air; and the best kind of all-wool blankets are so warm and light that they leave nothing to be desired. When children are very restless it is a good plan to have tapes attached to one or more of the blankets, that by this means they may be tied to the sides of the cot, and so cannot be wholly thrown off by the sleeper.

The fashion of rocking children in a cradle has almost entirely disappeared, but nurses will still sometimes accustom a baby to be "hushed" to sleep by gentle movements and soft sounds; this is a great mistake, for the simple reason that a habit is much more easily formed than broken. If a child is from the first laid in its cot to sleep, without further attention, it will fall asleep just as readily and easily as with any amount of assistance; but, if once it is accustomed to expect attendance, it will be very unwilling to dispense with it; and, if for any reason this is not forthcoming, the baby will cry and fret, and perhaps lose half its sleep. The mother or nurse will therefore do wisely not to create an artificial want; which, if created, will probably become a burdensome tax upon herself.

## CHAPTER V.

### CLOTHING.

WITH regard to clothing in the early days of infancy, I have not much to add to what I said in the first chapter. Of course when the baby is taken out of doors it should be well wrapped up, and its head also should be warmly covered, if the weather is at all chilly. Everything should be warm enough for the season, and soft, light, and loose. There should be no tight strings anywhere, and every limb should be left free for movement. The feet should be warmly covered with thick woollen socks, or little woollen boots reaching some way up the leg, as the lower limbs are always the first to suffer from any deficiency of circulation, and therefore from cold. As a fact, however, those who follow the fashions are more likely to let their babies suffer from chilled arms, for one constantly sees what they call "robes" in the shops with miserably short sleeves, that leave nearly the whole of the poor *little arms to* suffer from cold. It cannot be too

often repeated that, though a baby's head may with advantage be left bare, or very lightly covered, every bit of its body should be warmly clothed, and only the little hands should peep out from sleeves, as close as they can be made without tightness, coming quite down to the wrist. The outer dress should come up to the throat, and an under dress, either of flannel or soft merino, should be nearly as high. Babies' lungs are very delicate, and it is simple madness to allow this extremely important part to be exposed, as it used to be in the days of "low necks," which abominations are, I fear, even now not quite extinct.

With reference to the out-door clothing I wish to give one word of special warning. Nursemaids are apt to consider the long embroidered cloak as a sort of sacred ornament, which is of a good deal more consequence than the baby it covers; and they will often be found to show their reverence for it by passing their arms beneath it, to avoid crumpling the precious garment. The result of this manœuvre is that the cloak hangs its whole weight (by no means inconsiderable) round the luckless baby's neck, and thus occasions great discomfort, which is quite unobserved by the nurse; and at the same time the use of the cloak, as a protection against cold, is sacrificed *to its appearance*; for, hanging down in this way, *it affords only* half the warmth which it is meant

to give. Let all sensible parents see that no cloak is bought at too great an expense for its purpose, and then let it be used in a way to show that not it, but the baby, is the primary object. It is of extremely little consequence whether there is more or less embroidery present, or indeed whether the cloak is new or old; but it is of very great importance that it should not drag on the baby's neck and half strangle it; and that it should be wrapped cosily round the whole body, so as to answer the purpose for which it was at least theoretically intended. In point of fact, fine clothes are by no means an advantage to babies, but a source of additional risk; as, for instance, a nursemaid will often purposely throw back the cloak to show off the embroidery on the under garment, and thus the baby will be quite needlessly chilled. A soft warm woollen shawl, folded snugly round the baby, would give it much more protection than the fine cloak, but few mothers have moral courage to use anything that makes their babies look less smart than other people's. The baby's dangers from cold are apt to increase when, if long clothes have been worn, the time for "short coating" arrives. The reasonable object in view is to curtail the long skirts, when the baby has acquired sufficient strength to be able and desirous to crawl about a little; but fashion is too apt again to step in with her insane dictates, *and to decree that* the poor little legs and arms

(and sometimes the neck too) which require warmth as much as ever, are to be left bare, or at least very imperfectly protected. From a medical point of view one cannot protest too strongly against this idea. Next in frequency to the deaths from errors in diet come the deaths from various forms of chill; and this is a risk that no sensible parent will run merely for the sake of a meaningless fashion. Turning again to the Registrar-General's returns for July 1884, I find that in the eight principal towns of Scotland there were 353 deaths from acute lung diseases; and that of these 139 (or nearly two-fifths) were those of children under five years of age. I have not the slightest doubt that, if exhaustively investigated, more than half — probably three-quarters—of this mortality would be found to be due to insufficient clothing, or exposure to cold in some form that might easily have been avoided; a few of the cases being probably due to extreme poverty, or inherited disease, but a far larger number to gross carelessness, or to compliance with some of the foolish fashions above referred to. If this is likely to be the case in July, the typical month of summer, how far greater will be the risk, and how far larger the mortality, in the colder seasons of the year!

Let me then beg all mothers to remember that *a young child* cannot take the same exercise as a *grown up person*, and that therefore, having less

ntrinsic power of calorification, it needs more
ids to warmth from without; and that those
ids should come in the shape of soft warm
lothing over the whole surface of the body, and
ot from close nurseries, or confinement from the
outer air. When the long clothes are given up
he little legs will need more, and not less, pro-
ection from cold, and they ought to be clad in
warm stockings, reaching above the knee, and
neeting drawers or a petticoat of fine flannel
or the protection of the upper part of the limb.
If the binder is abandoned, as it frequently is at
his time, its place should be taken by soft merino
vests reaching well over the hips; and, if in hot
weather it is thought desirable to dress the child
ess warmly, it is much better to give up some of
he outer garments rather than to take away any
of the woollen clothing I have described. It is
nuch safer to consider a complete dress of woollen
naterial indispensable to a baby, and (except in
ases of unusually irritable skins) it is better to
ave this garment next the skin. Wool has the
louble advantage of being (1) a bad conductor
of heat, and therefore shielding the body from
apid changes of temperature; and (2) a great
bsorber of water, and therefore taking up
eadily the insensible perspiration, which might
pass through cotton or linen, with subsequent
evaporation and consequent sense of chill. For
*his reason* woollen clothing is useful even dur-

ing severe exertion, and still more so after it, as mountaineers will tell us as well as scientific authorities.[1]

I believe that fashion is not alone responsible for the bare arms and legs that seem to medical eyes so full of danger; parents have an extraordinary idea that exposure to cold is "hardening"; and they forget how very small is the reserve of heat, and how very insufficient the power of resistance in a young child. It may be well enough to try to "harden" a boy of six or seven years of age, when he eats abundantly and takes constant exercise in one form or another; but the experiment with an infant, that numbers hardly as many months, is so full of peril that one only wonders that so many children escape from it with their lives. The truth is, however, that a healthy child, under even moderately favourable conditions, is hard to kill; and, indeed, if it were not so, the human race could hardly have survived and multiplied as it has done up to the present day.

There is one small matter on which a special word of caution may be needed, viz. that the baby's chest must not be allowed to get wet and chilled at the time the child begins to "dribble." Not only should a thick bib be worn, but care should be taken to see that it is always changed *before it becomes* saturated with moisture. Some

[1] *Practical Hygiene*, by Dr. Parkes. Churchill, 1878.

babies dribble much more than others, and in such cases it may be needful to use a piece of ordinary black mackintosh, under the bib and over the dress; the so-called "waterproof bibs" sold in shops are not generally satisfactory. This detail often does not receive sufficient attention, and many an attack of inflammation of the lungs may have originated in a delicate child from no more mysterious cause than this.

If it is important to keep the child warmly covered in the daytime, it is quite equally necessary to ensure sufficient warmth at night. If, as I strongly advise, the nursery window is never *quite* shut at any time (except when the baby is being dressed or washed,) there will be a constant, though gentle current of pure cold air, which is most salutary for the child's lungs[1] and general health, but which may chill the body and limbs if they are not adequately protected.

Every one knows how apt a baby is to throw off its bed coverings, at least in part, and it is therefore very unwise to depend on these only for warmth. A woollen dress entirely covering the body is the best of all protections, and may be worn either next the skin or outside of a nightgown of fine cotton or cambric. This dress should, of course, not be the same as the one

[1] For proof that Phthisis (commonly called Consumption) is especially due to impure air see Parkes' Practical Hygiene, *Fourth edition, p. 116, et. seq.*

worn in the day, but should be put on freshly after the evening bath, while the day garments are hung up to be thoroughly aired, if they are to be used again next day.

While the infant is in bed it is desirable to have the napkin very loosely attached to the binder, so as in no way to impede its freedom of motion. A thickly-folded sheet or cloth placed under the baby will afford additional protection to the bed. In this connection also it may be well to say that if a waterproof sheet is used in the crib, it should never be placed directly under the sheet, but below a warm blanket, which blanket should, of course, be changed as soon as soiled. It is desirable to have two or three under-blankets for this express purpose, and to use a fresh one every night if necessary, while the one previously in use is washed and thoroughly dried. To the neglect of such small precautions many a fatal illness is really due.

An intelligent nurse will soon train even a very young baby to give intimation of its needs when awake, and if it is always taken up promptly, and held over a vessel, it can soon with a little watchful care, be trusted not t wet itself without notice. As soon as this resu is achieved, the napkin should be entirely left c except during sleep, and during exercise out *doors.*

## CHAPTER VI.

### FUNCTIONS OF THE SKIN—BATHS.

ALL duties are best performed when the reason for them is intelligently understood. With the hope of impressing on mothers the importance of ventilation, I thought it best to give a short sketch of the function of Respiration; and I now wish briefly to describe the chief functions of the skin, that the use and object of bathing may be fully appreciated.

Without going into minute details, which must be sought in the standard works on Physiology, to which I have already referred,[1] I may say that the skin forms a covering for the whole surface of the body, and that it is very richly supplied with nerve filaments or threads (on which the sense of touch depends), with hair follicles, and with two sets of glands, for the secretion (or separation) of sweat and of fatty matter respectively. By means of these glands a much larger quantity of waste matter is discharged from the body than

[1] See p. 36, *Note*.

we are at first aware. An adult excretes about six pounds of water every day, and about one-third of this quantity is given off by the skin[1] through the medium of the sweat-glands. Each of these glands consists of a tiny coil of microscopic tubes, terminating in a duct that passes upwards and opens on the surface of the skin under the name of a "pore." Round the coil of tubes is wrapped a dense network of fine capillaries (just as is the case with the air-cells of the lungs), and these capillaries bring the blood all round the gland, in order that from this fluid its own secretion—the sweat or perspiration—may be separated, and then emptied by means of the duct on the surface of the skin. It may seem at first incredible that such a process should be going on constantly within us, without our knowledge; for the "insensible" (or ordinary) perspiration is so-called because it does not moisten the skin in any perceptible degree. The explanation lies in the exceeding minuteness of each gland and duct, which may be best estimated when we know that it takes nearly *seven millions* of them, in each one of us, to effect the work I have just described; and that, though each tube measures but a quarter of an inch, the whole length of tubes placed end to end would stretch over a distance of about *twenty-*

[1] *Of the* remaining 4 lbs. about 2½ lbs. are discharged through *the kidneys and* bladder, and about 1½ lb. through the lungs in *the form of watery* vapour.

*eight miles!*[1] Surely when we realise the marvellous character of the apparatus thus provided, we shall not grudge our very small share of labour in taking care that the tiny orifices shall not be choked up; but shall, by perfect cleanliness, be kept always open, and free to perform their wonderful office.

The insensible perspiration, of which I have spoken, is taking place incessantly by night and by day; but the quantity of fluid discharged from each pore is infinitesimal, and therefore is carried off by evaporation almost as soon as poured out, so that it is not perceptible either to ourselves or to others. After severe exertion, however, or in great heat, the functions of the sweat glands are much increased, and the quantity of fluid is augmented till we see it stand in very visible drops on the skin, or pour down from it in a stream. This is, no doubt, intended as a beneficent provision of nature for reducing the surface temperature, as by means of evaporation the skin soon becomes much cooler, and it is well known that those who perspire freely suffer less than others from very great heat.

Besides the sweat glands we have also the "sebaceous glands," by which fatty matter is excreted from the skin; and the ducts of these open mainly into the hair follicles (or little bags out of which the hairs spring), with the nutrition

[1] Carpenter's *Human Physiology*.

of which they are, no doubt, intimately connected. It is also probable that the oily secretion of these glands is of great use in preserving the softness and suppleness of the skin; but it can be easily seen that, if the secretion is excessive, or if any surplus is not duly removed by constant washing, the fatty matter will tend to accumulate on the skin, with results equally unpleasant and unwholesome.

The first object, then, that we have in view is the constantly renewed purification of the skin by means of bathing. The functions of nature do not stop, and, if our action is less persistent than hers, we shall soon find the delicate skin choked up and unable to perform its office. To keep a baby's skin in perfect health it ought to be washed all over at least once (and better twice) in the twenty-four hours. It appears that our ancestors were not of this opinion, for in a book written about the end of the last century, we find a distinguished physician[1] urging the advisability of washing the infant thoroughly after birth (as a thing by no means universally approved), and adding with some apparent hesitation that "it were well if it were a common practice to repeat the washing for two or three days, with light friction of the skin, which it is not improbable might tend to prevent the red-gum and other

[1] *Dr Michael* Underwood *On the Management of Infants. London, 1799.*

similar affections of the skin." It appears, indeed, from this authority and others,[1] that skin diseases were then considered almost a matter of course for babies, and that all sorts of detestable remedies (including the "thin skin of a veal kidney") were used by the medical profession, probably to the aggravation of the evil, which a timely application of soap and water, repeated for more than "two or three days," would never have suffered to appear.

In these matters the educated classes at least are now somewhat wiser; but it is still very often necessary to take some trouble to convince the mothers of a lower social grade that their babies will be not the worse, but infinitely the better, for daily ablutions. During the first few weeks none but warm water should be used, though in the morning it is well to have it somewhat cooler than at night; say from 80° to 85° in the one case, and from 90° to 95° in the other. While the head is more or less bare, or covered only with short down, it may be washed in the same way as the rest of the body; but when the hair begins to grow thick and long, as it does very early in some babies, care should be taken not to saturate the hair, as it is difficult to dry it thoroughly, and a chill is easily produced by long continued evaporation. In such cases the washing should

[1] See also Professor Hamilton *On Children in Early Infancy. Edinburgh, 1792.*

be done, perhaps twice a week, with a nearly dry sponge or flannel, at successive partings, so that the mass of hair may not be wetted. Scissors should be freely used to keep the hair of very moderate length, even long after the expiry of absolute infancy.

So far I have spoken only of bathing as conducive to cleanliness, and for this purpose warm water is the only suitable medium, as any application of cold will tend to close the pores of the skin. But as the child advances in age, cold bathing becomes desirable, and its object is altogether distinct from that already considered.

To understand thoroughly the phenomena of *Reaction*, it would be necessary to go into a full consideration of the nervous system, which is impossible here. It must be enough to say that the nerve filaments (or threads), which are so freely distributed beneath the surface of the skin, are of two kinds; and that one kind conveys to the spinal cord any sensation experienced at the end of the nerve, and that the other brings back from the spinal cord a corresponding message, or impulse, resulting in muscular action. Now when the body, or any part of it, is plunged, for example, in cold water, or when cold water is dashed on the skin, the shock felt at the surface is rapidly transmitted to the nerve centres; and, *in obedience to* the return impulse, a rapid *contraction of* all the small bundles of muscular

fibres takes place, and the skin seems to shrivel up, the little hairs becoming erect, and the familiar appearance of "goose-skin" is produced. At the same time the capillaries also contract, the blood is partially driven from the surface, and the colour of the flesh seems to become paler, and its temperature lower. This is the first effect of the shock of cold, and, if carried to too great an extent, it may have very injurious results. But then comes in the curious faculty of Reaction. Nature seems to resent any interference with her normal arrangements, and in a short time a healthy body begins to feel her revenges, not only in a return to normal action, but to a marked exaggeration of its processes. The contracted muscles expand to their full extent, the capillaries dilate to more than their ordinary size, a faster rush of blood pours into them, and a glow of warmth and colour spreads itself over the whole surface; the circulation being notably quickened and the sense of shock being replaced by an unusual feeling of exhilaration. When this result is reached, the object of the cold bath is attained, and a healthy stimulus has increased the amount of enjoyable vitality.

Now, a very young baby has not sufficient power of reaction to profit by a cold bath; but, after a month or two, the morning bath may be gradually lowered in temperature from warm to *tepid, and from* tepid to cool; and when three or four

months old a healthy baby may with advantage be sponged with nearly cold water, if its feet are in warm water during the process. A careful nurse will do nothing of this sort suddenly, but will notice the effect of the gradually lowered temperature, and will only proceed as she finds herself encouraged to do so by the increased power of reaction. In many cases it is better to begin every morning with tepid water, and then gradually to use it cooler, until the final sponging is quite cold. If the baby is fit for such treatment it will show its enjoyment of it; and the child's pleasure, and the manifest glow upon the skin, will be the best witness to the value of the process. If these are absent,—if the child shrinks from cold sponging, or if its skin remains blue and chilly after it,—the use of cold water should for the time be entirely discontinued. Sometimes sea-water, or water in which sea-salt is dissolved, can be borne when ordinary cold water produces too great a chill. The experiment at least is worth trying when occasion offers. In any case no infant should be allowed to remain in cold water for any length of time,—it is the first shock that does the good if it is to be done; and, except in very warm weather, it is undesirable to continue a cold bath for more than a minute or two. Brisk rubbing and thorough drying should *always be* the next process; and, if the room is *warm and* free from draught, it is a good plan to

let the baby, when quite dry, tumble about for a few minutes, and take an "air bath," before its clothes are put on. All washing, whether in cold or warm water, should be done before a fire unless in extremely warm weather; but care must be taken not to go to the other extreme, and to scorch the delicate skin before a furnace that might roast an ox.

The cold bath, then, is useful mainly as a stimulus to increased vitality. It forms a suitable beginning for the day, and should immediately be followed by a meal, for which the appetite will probably be more than usually keen. The hot bath, on the contrary, is desirable as a means of thoroughly cleansing the skin from its own secretions, as well as from external impurities; and it acts also as a sedative to the nervous and muscular systems, as most of us know when we have taken a hot bath after a long journey or a fatiguing day's work. Just, however, as cold contracts the tissues, so warmth relaxes them and opens the mouths of all the little ducts. The skin in this state is much more susceptible of cold than usual; and as reaction occurs in this case also, there will be a tendency to a fall of temperature subsequently. When, therefore, the baby has had its hot bath, and is thoroughly dried, we cannot too quickly get it dressed for the night, and placed safely in bed, where it will *be in no dang*er of chill; and its milk or food

should be given to it after it is tucked up for the night.

It may be well to say that neither hot nor cold baths should be given within an hour after food, but just about the time when the digestion of the last meal will be completed. During the early process of digestion, the circulation is necessarily especially active in the stomach and intestines; and, if the blood is drawn off violently to the surface, as it is in different ways by both hot and cold baths, we may surely expect disturbance to ensue, and this will probably show itself in sickness and indigestion. After a bath, on the contrary, it is always desirable to give some nourishment, to compensate for the increased activity that has just occurred; involving as it does a quickened circulation, a more rapid progress of tissue changes, and consequently a greater capacity for nutrition and assimilation.

## CHAPTER VII.

### VACCINATION.

It seems extraordinary that, in the latter part of the nineteenth century, it should be needful to say even a word in defence of Vaccination, of which the civilized world has now had such beneficent experience for nearly a hundred years. But a perfectly senseless outcry, based on incorrect data and supported by erroneous arguments, has been raised, in some cases by those who ought to have known better; and Anti-vaccination Societies (which ought more properly to be called Associations for the Propagation of Small-pox) have been formed, to disseminate among the less educated classes a prejudice which may be only too readily caught up by those who are themselves unable to investigate the grounds, or no-grounds, on which it really rests. I am told that there are people wicked enough —and possibly ignorant enough not to know their wickedness—to send post-cards denouncing *vaccination* to parents, whose names they know

only by means of the announcement of births in the daily papers; and that by such means a very considerable amount of anxiety and distress is caused, even to those who are not ultimately so unwise as to be ruled by such mischievous counsellors.

To those who wish to go thoroughly into the subject I can recommend no better guide than a shilling pamphlet written by Mr. Ernest Hart,[1] in which he narrates at some length the ravages of Small-pox in past times, and the steps by which we have at length attained the almost complete protection that is afforded by vaccination. A still more exhaustive treatise on the subject has been published by one of the Medical Inspectors to the Privy Council,[2] but this is full of professional details, and is perhaps more suited for medical readers than for the general public.

For those, however, who may have no time or inclination to consult larger works, I will endeavour in the following pages to explain briefly the following points:—

(1) The need for protection from Small-pox.
(2) The means by which it is attained.
(3) The groundlessness of the objections made to Vaccination.

[1] *The Truth about Vaccination*, by Ernest Hart, M.R.C.S. *Smith, Elder and Co.*, 1880.
[2] *A Handbook of Vaccination*, by Edward C. Seaton, M.D. *Macmillan and Co.*, 1868.

First, then, as to the need of protection from small-pox. Any one who had considered this an open question a century ago would have made himself simply a laughing-stock; but the truth is that, by means of vaccination, we have been to such a very great extent delivered from this terrible disease, that we can hardly realize what a scourge it was in the days of our ancestors. To say that it decimated Europe would probably be to understate the facts. Epidemics were constantly recurring, and even in average years the deaths from small-pox amounted to one-fourteenth of the whole mortality. "In England, according to the calculation of Dr. Lettsom, the average annual deaths from small-pox were about three thousand out of every million of the population, a death-rate which with the present population (1868) would give an average of considerably more than sixty thousand deaths a year. . . . The younger part of the population were peculiarly its victims: in some of our great cities it was found that, on an average of a long series of years, nearly, or more than, *one-third of all the deaths under ten years arose from small-pox.*"[1]

In fact, though we hear more about the Plague, because of the great numbers who were carried off by its occasional epidemics, we are told by a medical authority at the beginning of this century that "we should probably be within the truth if

[1] *Seaton's Handbook of Vaccination.* 1868.

we were to assert that small-pox has destroyed a hundred for every one who has perished by the plague."[1] The same writer again remarks that "it seems almost needless to premise that the small-pox is of all maladies that which, during the last thousand years, has destroyed the largest portion of the human species and been productive of the largest share of human misery." People are now-a-days in great terror of Cholera, but it is certain that the mortality from that cause has never even approached the slaughter effected by small-pox, for the latter was practically ever prevalent, while the former only occurs at comparatively long intervals, and over limited areas. "The havoc of the plague," says Macaulay, "had been far more rapid, but the plague visited our shores only once or twice within living memory. The small-pox was always present, filling the churchyards with corpses, leaving in those whose lives it spared the hideous traces of its power."[2]

Nor did the terrors of small-pox end here. We now see so few people pitted with this disease that we forget how common such disfigurement was in the last century; and this was the least of the evils left behind. We are told that two-thirds of the applicants for relief at the Hospital for the Indigent Blind owed their loss of sight to small-

[1] *Medico-Chirurgical Transactions*, 1819; Paper read 10th *November 1819* by Sir Gilbert Blane, M.D.
[2] *Macaulay's History of England*, vol. iv.

pox; and we have but to refer to the writings of physicians of that time to see how frequently it was followed by deafness, glandular swellings, obstinate ulcerations, etc. We need only realise this awful condition of things to feel, as our ancestors must have felt, that a mode of deliverance was more desirable than words could express. If, at the present day, any learned man were able to announce that he had discovered a safe and simple process by means of which we might defy cholera, he would indeed merit our best gratitude, but he would not rescue from death anything like the proportion of lives that have been saved by the enormous reduction of small-pox mortality.

II. The first hope of deliverance arose from the fact that a person who had once had small-pox seldom took it a second time, and this had in eastern countries originated the practice of *Inoculation;* by which is meant the voluntary taking of small-pox under favourable conditions, to avoid the far greater danger attending it under worse circumstances. This practice was introduced into England in the year 1721 by Lady Mary Wortley Montague. It was found that if small-pox was thus voluntarily taken, by introducing under the skin some of the *virus* (or small-pox poison) from another person, the disease was almost always very mild, and no subsequent infection need be feared. This was hailed as a discovery of the most beneficent kind, and so it was as regards the persons who

submitted to inoculation. But great evil arose from the fact that by such inoculation additional cases of small-pox were artificially created, and more centres from which it could spread were thus established, so that, as regarded those who did not submit to inoculation, the risk was absolutely greater, and the mortality correspondingly increased.

Near the end of the last century, however, a still greater discovery was made. Dr. Jenner announced in 1798 that he had completed a series of investigations and experiments that proved the existence among cows of a disease closely allied to small-pox, which could be communicated to human beings without danger, and which, at the cost of a very slight indisposition, protected them, almost absolutely, against small-pox and its terrible results. He found this out by observing that dairymaids often became inoculated by accident with this so-called Cow-pox (or *Vaccinia*), and that they never afterwards took small-pox, however they might be exposed to the infection. The idea then occurred to him of doing intentionally what had previously been done accidentally; he communicated cow-pox to a number of persons, by inserting matter from the cow under the skin, and found that all those who were so treated were practically safe from small-pox. He then went a step farther, and proved *that equal protection* could be obtained by means *of matter from* a cow-pox vesicle in a human

being; and in this way the principle of *Vaccination*, or the artificial production of cow-pox as a protection against small-pox, was established. Within two years Jenner was able to report that 6000 persons had been thus vaccinated, and that by far the greater number of them had been subsequently exposed to small-pox infection without taking the disease. It should be distinctly understood that Dr. Jenner did not maintain then, and no sensible person asserts now, that it is absolutely *impossible* for a vaccinated person to take small-pox; but only that, instead of its being probable that he will do so if exposed to danger, the risk of infection is reduced to something less than one in a thousand,—so reduced, in fact, as to be little more than nominal.

This, then, is the meaning of vaccination. Whether the process is conducted by means of matter (called "vaccine lymph") from a cow or calf, or from a man or child who has previously received cow-pox in the same artificial manner, the practical result is the same. So long as the effect of the vaccination lasts—for a considerable number of years certainly—there is practically no danger from small-pox; and, in the very few cases where properly vaccinated people have taken small-pox, the disease has been usually so modified as to be deprived of nearly all its terrors.

I do not wish to spend more time on the *general history* of vaccination, but as so many

false statements are made on this subject, I should like before leaving it to mention a very few figures, which are, I think, sufficiently conclusive. In the last century, before the discovery of vaccination, the annual deaths from small-pox were estimated at 3000 for every million of population; forty years after the introduction of vaccination this number had fallen to about 770 per million; when public provision was made for gratuitous vaccination for all (1841-1853) the figures fell to 304; and finally, after vaccination had been made compulsory by law (though by no means universal), the mortality per million (1854-1865) became 202.[1] That is to say, briefly, that out of every 3000 yearly deaths from small-pox in the last century 2798 lives have been saved by the introduction of vaccination. Or, to take it in another way. We are told that in the early part of the last century, out of every 1000 deaths, 78 were caused by small-pox, —that is, about one in twelve: during the early part of this century (1804 to 1819) the proportion had fallen, after the discovery of vaccination, to 53 per thousand, or about one in nineteen.[2] Referring to the most recent tables to which I have access, I find that in the five years, from 1875 to 1880, the proportion of deaths from small-pox to the total mortality was less than 4 per thousand—about one in 260![3]

[1] Seaton's *Handbook of Vaccination*, p. 252.

[2] *Medical-Chirurgical Transactions*; Paper read 10th November 1819 by Sir Gilbert Blane, M.D.

[3] *The Truth about Vaccination.*

Can any other human achievement show such a result in such a space of time?

III. A very few minutes must suffice to consider the objections brought against vaccination. Probably the only one really worth considering is the argument that compulsion in such a matter is an infringement of personal liberty. Now-a-days the "right divine to govern wrong" finds few defenders; and the present law practically amounts, as Dr. Seaton well observes, to a "solemn decision of Parliament that personal predilections for small-pox should not be cultivated by individuals to the danger of their neighbours." It is not generally considered inconsistent with liberty that the police should prevent a man from setting fire to his own house when it forms part of a city street, and the importance of arresting a hideous disease is at least as great as that of preventing a conflagration. Those who desire to retain their full right to propagate infectious diseases, should certainly form a settlement of their own upon some secluded island, where they may mutually enjoy their taste to the full; in civilized communities the well-being of the many must over-ride the suicidal hobbies of the few.

The other main objections to vaccination may, so far as I am acquainted with them, be roughly summed up under two heads. Firstly, it is asserted that vaccination does more harm than it *prevents by* causing local irritation, erysipelas,

etc.; secondly, it is said that it may be the means of conveying constitutional diseases from sickly children to those who were previously healthy. Each of these statements is practically false.

(1.) It is quite true that in a few rare cases, erysipelas, or some other inflammation, has occurred after vaccination; but in nearly every instance this has depended either on the health of the child itself, in whom a scratch or wound of any kind would have been likely, at the time, to produce such a result; or else on some exceptionally bad condition of the atmosphere, or of the building in which the operation was performed. The true preventive of such results is care as to the state of health of each child before vaccination, and as to the general conditions of time and place; and such care every conscientious doctor may be trusted to exercise. If, in any particular case, a parent thinks a baby too weakly for vaccination, the special attention of the medical attendant should be requested, and the doctor's decision may generally be accepted without fear.

(2.) The second assertion that special diseases may be transmitted with the vaccine lymph from one child to another is even less well founded than the first. It is as certain as anything can be that the lymph by itself can transmit nothing but the vaccine infection; and every honest and *careful* doctor may be trusted to see that nothing *but pure lymph* is used. Even if there is some

carelessness on the part of the doctor, the chances of any evil results are extremely remote, and not for one moment to be compared with the infinitely greater and far more certain danger involved in the risk of small-pox. Even if all the cases that the anti-vaccinators profess to report were founded on fact, the evil would be quite inconsiderable beside the enormous benefits of vaccination; but as a matter of fact, case after case has been exhaustively investigated by Government inspectors and others, and Dr. Henry Stevens, chief Inspector of Vaccination for the Local Government Board, bore witness in 1879 that, in the whole course of his enquiries on behalf of the Government, he had not found a single case where any constitutional disease had been clearly transmitted from one child to another by means of vaccination.[1] There is a particular kind of rash, derived from hereditary taint, which is apt to appear for the first time when a baby is one or two months old; and a good many cases are on record where babies, vaccinated just about this time, have had this rash soon afterwards; and parents have only too eagerly seized upon the fact as an explanation; whereas every doctor would know quite well that the rash would probably have appeared, just the same, whether or not the baby had been vaccinated.

At any rate all fear of receiving any disease

[1] *British Medical Journal*, Dec. 13, 1879.

from another baby may be set at rest by the use of "calf-lymph,"—vaccine matter direct from an animal; this is becoming more and more common, and arrangements may ultimately be made to render it as easy and as cheap as the old plan.

It seems almost needless to refer to the extraordinary but oft-repeated statement made by unscrupulous agitators, that "vaccination is kept up for the benefit of the medical profession." If by "benefit" is meant simply the receipt of fees, the exact reverse would be the truth. As it was well and tersely put the other day, "the interests of the profession would be best served by the abolition of vaccination, which would ensure 90 per cent of the population having long illnesses from small-pox."[1]

As some people may fancy that small-pox has at any rate lost its power in the present day, it may be as well to quote the experience of a doctor on the subject during the last few weeks. Dr. Tweedy writes: "Within a month I have seen at University College Hospital, and at the Moorfields Eye Hospital, three cases in which, in addition to very deep scarring of the face, the sight of both eyes has been completely and irretrievably lost from recent attacks of small-pox. . . . In one case non-vaccination had been deliberate and culpable, the father having 'objected' *for some* unexplained reason."[2] Dr. Lees reports

[1] *Lancet*, 20th September 1884. [2] *Lancet*, October 18, 1884.

a similar recent case of a young woman who had lost her right eye from small-pox, and whose face was very deeply pitted and disfigured. On enquiry she stated that her father, having lost a baby "*soon after* vaccination," had refused to allow his three youngest children to be vaccinated. Some years ago the eldest of these three died rapidly of "black fever," and this patient lost her eye. The third insisted on being vaccinated, and entirely escaped the disease.[1]

In the teeth of such facts as these surely the anti-vaccinators may well pause.

If, then, the theory of vaccination is accepted as beyond cavil, a very few words will dispose of the practical details. The law requires that every child shall be vaccinated during its first three months, unless a doctor certifies that it is unfit for the operation. Arrangements are made everywhere for gratuitous vaccination of all comers by the public vaccinator, and particulars as to time and place can always be obtained from the Registrar who records the baby's birth, and who then gives a schedule respecting vaccination. There is, however, no necessity to go to the public vaccinator except as a saving of expense; the law accepts as equally valid the certificate of every registered medical practitioner, and when the mother has been attended in confinement by a doctor, the same doctor usually vaccinates the

[1] *Lancet*, November 8, 1884.

child. He must see it again on the eighth day after vaccination, in order to give the necessary certificate.

Apart altogether from the requirements of the law, it is convenient to have a child vaccinated when two or three months old, so as to have this little business well over before the teeth begin to come. A healthy child will generally undergo vaccination, and the subsequent attack of vaccinia, with no more than slight indisposition. It will probably be rather restless, and perhaps a little feverish for a few days, and its appetite and its sleep may be less regular than usual. The vaccine vesicle itself will probably cause local uneasiness, though this will be reduced to a minimum by the use of one of the little shields that can be bought from any chemist for sixpence or a shilling each. These shields consist of a small hollow frame of wire, which should be put on directly vaccination is performed, and kept on until the process is altogether completed by the drying up of the vesicle. In this way we avoid the risk (which sometimes renders vaccination useless) that the matter when freshly applied may be wiped off by a sleeve or other garment; and subsequently the arm when it becomes sore is protected from all pressure. Occasionally, however, the shield itself occasions irritation, and *must then of* course be removed.

## CHAPTER VIII.

### MINOR AILMENTS.

In no former part of this book have I felt such difficulty as with reference to the present chapter. It is, as I said at the beginning, quite contrary to my wish to encourage mothers or nurses to treat any case of real illness; so I shall say nothing of the various eruptive fevers, hereditary diseases, or other disorders common to infancy, which absolutely require a doctor's attendance. On the contrary, I would very strongly urge those who have charge of the nursery to lose no time in sending for medical help, when any need for it arises; as illness progresses much more rapidly in infancy than in later life, the power of resistance is less, and the results usually more serious; so that even a day's delay may in many cases make all the difference between the life and death of a baby.

On the other hand, nearly all the minor indispositions to which babies are subject are the *result of* carelessness or ignorance on the part of

their guardians; and I venture to hope that if the principles laid down in the foregoing pages are intelligently carried out, few such incidents will ever occur. If the food is what it should be, and is given at right intervals, indigestion and sickness are not to be expected to arise; and under such circumstances Nature usually takes care herself of the condition of the baby's bowels. If proper air and exercise are secured, and are alternated with sufficient rest, the child will increase in vigour daily, and will have quiet and refreshing sleep. If the nursery is well-ventilated and gets plenty of sun, and if care is taken to avoid exposure to chills and draughts, both indoors and out, no chest complaints are likely to occur, and convulsions will probably be unknown. Even the critical times of vaccination, teething, and weaning, will probably pass off with nothing more than some temporary uneasiness; and under such circumstances a healthy baby may easily pass through the whole period of infancy without a single day's illness.

The province of the mother and nurse should, as I have already stated, lie almost exclusively in prevention; here their greatest triumphs may be secured, and when they overstep this limit it is usually for the injury, rather than for the benefit, of the baby. The nursery medicine-chest *is simply an* abomination, and when "well-filled" *it is usually the* source of untold evil. Half a

dozen of the simplest remedies are alone permissible; and all powerful drugs, and every "soothing syrup" and "teething powder," without exception, should be rigorously banished. Dr. Combe remarks most truly that "wherever the mother of a family is observed to be ready with doses of calomel, cordials, anodynes, and other active drugs, the likelihood is that one-half of her children will be found to have passed to another world."[1]

I will then endeavour to mention briefly the only remedial measures which may be legitimately employed in the nursery, without risk of injury. Among these comes first and foremost the *Hot Bath.* If a baby has experienced a chill, or seems in any way out of sorts, the nurse will hardly ever err in undressing him before a fire and giving him a five minutes' bath in water about the temperature of 100°; following this with a thorough drying, and consignment to bed for the rest of the day. If the child's body is kept warm, while plenty of fresh air circulates through the room, this simple measure will often suffice to remove all uneasiness, and to prevent the slight chill from resulting in a heavy cold. If any threatening of convulsions or of croup appears, the same treatment should be at once resorted to, while awaiting the doctor's arrival. If the head is unusually hot, it may be well to

[1] *Management of Infancy.*

the same time to apply to it a cloth wrung out of cold water, especially if there is reason to fear an attack of convulsions. This is not necessary, however, in the case of an ordinary chill.

If the breathing is at all affected, or the child's cry sounds hoarse, a poultice of linseed meal, or bran, will probably be useful. It should be made by stirring the meal with boiling water to a stiff smooth consistence, and then enveloping the hot mass in a thin cloth or flannel, taking care that it is not wet enough to drip, and that the bed and night clothes are not made damp in putting it on. A piece of wadding laid over the poultice will keep it warm longer. As soon as it becomes cool it should be removed, and, if necessary, a hot one substituted. If another poultice is not put on, the chest should be carefully dried, and sprinkled with a little starch or violet powder, and a piece of warm flannel laid over it for the next few hours. But if the symptoms of cold do not disappear within a few hours, a doctor should be at once called in.

If there is any threatening of croup a doctor should be quickly summoned; but as the disease sometimes makes rapid progress, it may be well to make an exception to my rule, and to give some hints for early treatment in case of delay in the appearance of the doctor. If the breathing *is greatly* embarrassed, and accompanied by the *croupy cry, relief* may sometimes be obtained by

holding a sponge wrung out of hot water to the throat, and applying smelling salts or *sal volatile* to the nose. If these measures are not sufficient from ten to twenty drops of wine of ipecacuanha may be given as an emetic, and if sickness ensues the child will usually be much the better for it. This remedy, however, is by no means to be left about in the nursery, but should be carefully locked away, and only used in cases of real emergency.

As to the condition of the bowels, the mother and nurse are often needlessly solicitous. Babies vary in this respect even in health, and though it is of course desirable to ensure regularity, it is by no means necessary to dose the child with physic whenever the slightest deviation from rule occurs. If, however, there is a persistent tendency to constipation, it may be well to give a teaspoonful of fresh olive oil once or twice a day, or to dissolve a teaspoonful of manna (an old-fashioned but excellent remedy) in the bottle of milk, if brought up by hand. Sometimes it will be sufficient to rub the baby's stomach with warm olive oil before it is put to bed; and it is always well to give such gentle measures a trial. Children who have breast-milk are less liable to constipation, and if it occurs it can generally be traced to a similar condition in the mother, to whom, in that case, treatment should be directed. *If the child* appears to suffer from indigestion as

well as constipation, some ten or twenty grains of magnesia, dissolved in milk, will probably be of use. To these three remedies I should restrict all nursery treatment of constipation, and if more is required medical advice should be obtained.

The contrary condition of looseness of the bowels is much more serious, and should never be allowed to continue, as it will readily drain away the baby's strength, and not unfrequently lead to a fatal result. If the baby is fed from the bottle, enquiry should be made as to the perfect health of the cow supplying the milk; and, under these circumstances, it is a good plan to boil all milk before it is given. If this should not be sufficient, a little "chalk mixture" may be given —a small teaspoonful, repeated after an hour or two —and with this the nursery treatment should end. Under no circumstances should any preparation containing opium be given as a domestic remedy.

If the child suffers from flatulence and indigestion, it is probable that the milk given is in some way unsuitable, and the best remedy will very often be found in giving Dr. Frankland's artificial milk as previously described,[1] or perhaps in substituting milk from an ass or goat for that from the cow. If, however, a temporary palliative is desired, it may be given in the shape of the simple "aromatic chalk powder" (*not* the one *combined with* opium), which can be obtained at

[1] See page 25.

any chemist's. From five to ten grains is an average dose for a young baby, and immediate relief will often be obtained by its use. Dill-water, too, is a good old-fashioned remedy; and its allies, carraway and anise waters, are also harmless, in occasional doses of about half a tea-spoonful in milk. A little lime-water mixed with milk (about a tablespoonful to half a pint) will sometimes prevent indigestion, but it should not be used habitually without medical advice.

The only other medicines which I should be willing to include in the nursery pharmacopeia partake rather of the nature of food than of physic, and will be useful only in the case of ill nourished children of less than average vitality; —I refer to cod-liver oil, and to that mixture of the phosphates of iron, soda, and lime, which is commonly sold under the name of Parrish's Chemical Food. These, either separately or in combination, frequently act like magic when given to weakly children; and in my Dispensary practice I use very large quantities of both, with the best possible results. They are not often required in the nurseries where unlimited milk of the best kind, with abundant air and sunlight, are attainable; but I mention them here with a view to babies in poor homes, where none of these essentials can be had in full measure. I believe that few greater charities could be practised than the *purchase of* these articles at wholesale rates, and

their distribution at cost price to the weakly infants of the poor; with assistance in procuring fresh milk in abundance, and a little general instruction in the value of cleanliness, fresh air, and sunlight. I find that the value of cod-liver oil and of Parrish's Syrup is very generally appreciated among the poor, but that they are frequently unable to avail themselves of them, on account of the prohibitory prices charged by retail chemists, who think nothing of adding from three to four hundred per cent to the cost price of their wares.

I cannot close this chapter without once more reiterating in the most earnest way my warning against allowing nurses to physic babies surreptitiously. It is notorious that "Fools rush in where angels fear to tread," and the more ignorant the woman, the greater generally is her inclination to play with edged tools. It should be laid down in the most absolute way that no medicine whatever, with the exception of the few simple remedies noted above, should be given to any infant without the sanction of the medical attendant. Above all, every form of patent medicine should be eschewed, and I should like to give a word of special warning against two of the nostrums most frequently and most injuriously administered to infants,—viz. Mrs. Winslow's *Soothing Syrup*, and Stedman's Teething Powders. *The public* owes a debt of gratitude to the Medi-

*cal Times and Gazette* for publishing an exact analysis of both these precious commodities; and showing that in the former case the syrup owes its "soothing," or rather its stupefying, properties to *absolute alcohol*, of which each teaspoonful contains about three grains. Stedman's powders are found to contain both *calomel* and *morphia*, neither of which ought ever to be given to a baby except on medical responsibility.[1]

It is very much to be hoped that before long Parliament will include all such preparations in the provisions of the Poisons' Act, and will make their sale impossible without a "poison" label on the bottle or paper containing them. In the meantime the commonest prudence will show the risk of using remedies of unknown, and probably dangerous, composition; and I trust that, at any rate, they will be held in horror by all the mothers and nurses who do me the honour of reading these pages.

This may perhaps be the best place for saying emphatically that *no form of alcohol* ought ever to be given to a baby without medical orders. Only the other day I came across an educated mother who was deliberately trying to stupefy a crying baby with teaspoonfuls of brandy, and who had no idea that her action was otherwise than commendable. I have also more than once, when visiting dispensary patients, caught a mother administering whisky to her baby, on the vague

[1] *Medical Times and Gazette*, vol. i., 1870.

supposition that it "would do it good." Nothing on the contrary could possibly be more injurious, and I trust that every reader of these pages will henceforth consider alcohol as entirely out of the question for an infant as would be any other form of narcotic poison. Tea and coffee, which are powerful nerve stimulants, are equally inadmissible without medical orders.

Before concluding this chapter I should like to say that, in any case of continued crying and unexplained uneasiness, it is desirable to undress the baby completely, and to examine its naked body thoroughly in a warm room, for very often some easily removed local cause of irritation is at the bottom of all the distress. A very painful case is on record of an infant who died in strong convulsions, for which the physician was vainly called in, and the cause was discovered only after death, in the shape of a pin that had been run right into its brain through the large fontanelle.[1] Had the cap been removed and the head examined at once, the child's life would probably have been saved.

In the same way mothers must be on their guard to ensure that indigestion and other indispositions are not artificially created by foolish acts on the part of the nurse. It is not, for instance, very uncommon to find that a baby *loses its appetite*, and seems out of sorts, for the

[1] Dr. Underhill. *Loco cit.*

simple reason that its nurse thinks it a kindness to keep it supplied with lumps of sugar, tied up perhaps in a cambric bag; and that, by constantly sucking these, its poor little stomach is put out of order, and general discomfort ensues. Very probably the nurse, who has done all the mischief, may next wish to complete her folly by physicking the luckless baby with some perfectly needless drug, and, by the time the doctor is appealed to, a nice little illness will have been artificially created; and it is well if the original cause is then discovered, and put an end to, before more mischief comes of it.

## CHAPTER IX.

### SUMMARY AND CONCLUSION.

If I have in any degree succeeded in the aim with which the foregoing pages were written, I shall have proved to mothers and nurses that there is in fact neither mystery nor difficulty about the care of infants; that all that is necessary is a careful and docile study of the laws of Nature, and then an intelligent and persistent endeavour to obey them, and to provide the necessary conditions for their observance. There is the deepest possible significance in the motto of the wise old physician, "*Je les pansais, Dieu les guérit;*" "I took care of them, God cured them." Our utmost efforts will be of no avail if we struggle against natural laws; our success is sure and certain if we first strive to understand those laws, and then to carry them out. The province of the physician is to find out where the natural order has been violated, and to use such measures *as may enable it* to resume its reign. The province of the mother and the nurse is to watch

carefully, to prevent such violation, and so to render the physician's aid unnecessary.

The main points to which I have endeavoured to direct attention are the great natural functions, which may be briefly summed up as follows:—

1. *Nutrition or Feeding.*—I have tried to explain the nature of an infant's digestive apparatus, the kind of food that it needs, and can make use of, and the precautions that should be taken in giving such food.

2. *Respiration or Breathing.*—The need of oxygen in the various functions and tissues of the body, the chief mode by which its constant supply is to be provided; and the care that we must take that nothing shall interfere with that supply, or with the excretion of the waste products derived from its changes.

3. *Calorification,* or the maintenance of animal warmth, which needs more attention in the infant than in the adult, because of the partial deprivation of one main source of heat,—muscular activity.

4. *Excretion* by the skin, as well as by the lungs and bowels, of the waste tissues that have fulfilled their purpose in the body, and now need removal from it.

These have been the principal topics that I have tried to explain, so as to enforce as clearly as possible the practical duties that devolve on those who have the care of infants, viz.—

1. *That the infant* shall be supplied with suit-

able food, modified according to circumstances, and given at proper intervals, and with perfect cleanliness.

2. That the nursery shall be thoroughly ventilated and properly warmed, and that advantage shall be taken of exercise in the open air to the full extent compatible with other needful considerations; such exercise being balanced by proper intervals of rest under suitable conditions.

3. That the infant shall be properly clothed and protected from cold, and that ornament and fashion be made altogether subordinate to utility and comfort.

4. That, by perfect cleanliness, the skin shall be enabled fully to discharge its functions, and both to rid the body of effete materials, and to increase the general vitality of the system, by means of surface stimulation.

These are the main points I have desired to insist upon, and if any reader thinks that in doing so I have gone needlessly into detail, or have laid undue stress on unimportant particulars, I beg her to remember that "trifles make perfection, and perfection is no trifle."

In the foregoing pages I have dwelt only on the physiological and medical points which need special attention in the case of infants; but I cannot conclude this little book without a few *words of earnest* warning to mothers, as to the *moral characters* of those to whom they entrust

the care of their infants. There is hardly any position so full of trust as that of a nurse, especially in the case of an inexperienced mother, and there is hardly any where abuse of this trust may be so disastrous in its consequences. A self-willed and conceited woman may neutralize all a mother's efforts by disobeying her instructions, or those of the doctor, or by giving unauthorised food or medicine on her own responsibility. Many a case of lifelong lameness has depended on some accident, trivial perhaps in the first instance, but neglected and thus rendered dangerous in consequence of the criminal silence of the nurse, who, to avoid blame, conceals the whole occurrence. Many a baby's life again is rendered miserable, and his temper soured for years, by the thoughtless cruelty of an ill-tempered nurse, who vents her own annoyance by slapping her helpless charge while without power either of resistance or complaint. Let every mother watch carefully the way in which the nurse is received by the infant, whether he is eager to come to her arms, or shrinks away from her with significant timidity. Only the other day I heard of the case of a much-prized only child, whose parents hardly thought gold good enough for him, who was habitually beaten by a passionate nurse, until a stranger, who happened to enter the nursery, noticed how the child shrank away at her *approach.* Other nurses, more criminal still, will

terrify children just emerging from infancy by frightful stories and vague threats of "the black man," etc., or by shutting them up in dark closets, till the child dare not be left alone after nightfall, and sometimes never recovers the shocks thus inflicted on his nerves. Women, again, of a low class and of bad antecedents, will sometimes teach evil habits even to very young children, and the harm done is quite unsuspected by the innocent mother, and therefore the seed sown may be left to bear a sad harvest for later years.

No enquiry can be too searching into the character of a nurse, no care too great to secure one who will be a true second mother to the children, and who will make their welfare indeed her first consideration. There appears to be no department in which the services of gentlewomen might be so fitly employed; and, where a nurse-maid can also be kept for rough work, the plan seems altogether desirable; though I would not for a moment suggest that there are not plenty of excellent women, belonging to the ordinary servant class, who are thoroughly worthy of confidence, and whose care is motherly in the best sense.

With one final word of caution I will conclude. However excellent the nurse, and however high her character, no mother has a right to do her *duty entirely by* deputy; and her own watchful *eye and habitual* superintendence will be the best

of all safeguards for her children. Let no nurse be trusted who desires to shut the mother out of the nursery; let it on the contrary be distinctly understood that the door is never to be closed against her visits, but that these are likely to take place at uncertain intervals at all hours of the day and night. Any nurse who objects to this may safely be dismissed; one who heartily loves the children, and desires to do her duty by them, will, on the contrary, be only too glad to welcome her mistress's presence at all times, if the mistress, on her side, shows reasonable consideration for the nurse, and is careful to respect her desire for occasional privacy, and not to interfere needlessly in trivial matters.

I earnestly hope that the counsels I have given may be of use to many a mother and nurse, who have hitherto failed to understand or appreciate the principles involved; and I am very sure that by earnest endeavour thus to carry out, simply but persistently, the laws of health in the nursery, many a day and night of anxiety may be spared to mothers, and an almost incalculable number of infant lives may be preserved.

THE END.

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